Marine Review

Registered U. S. Patent Office

THE BUSINESS OF TRANSPORTATION BY WATER

NEW YORK CLEVELAND LONDON

Published Monthly
Vol. 55, No. 8

AUGUST, 1925

$3.00 a Year
35c a Copy

Your Guide To This Issue

America's Marine

AMERICA should have a merchant marine in the foreign trade commensurate with her greatness. The recent going into commission of a new turbine liner in the coastwise trade leads to some speculations as to ways and means to help bring this about.

See Pages 281 *and* 284

Still Bickering

PULLING at cross purposes the shipping board is in a turmoil. The question of authority to accept a responsible bid to scrap 200 fast deteriorating, idle, useless, government ships, is the bone of contention.

See Page 289

Clean Oil Needed

FUEL oil of ordinary density if clean can be used to better advantage in internal combustion engines than the lighter diesel oil. It is cheaper and it gives more power per unit.

See Page 291

An Odd Drydock

HOW a German shipyard forced to give up its floating drydock under the terms of reparations improvised a drydock out of a canal lock, is interestingly told by an authority.

See Page 296

Plan Terminals

PLANNING port terminals on a scale looking to the future and developing units in such plans from time to time shows both enterprise and discretion. Oakland across from San Francisco has already begun to use the first complete unit of its Encinal Terminals project.

See Page 309

Maybe your welding problem is unique

PERHAPS a new welding method will have to be developed. Possibly the problem will need some engineering thought. It is even conceivable that competent welders will have to be selected and organized into a department.

If you have such a job on hand you will want advice from someone who is more than an expert welder. You can get this kind of help from a Linde Service Supervisor.

Service Supervisors are men of wider experience and broader training than the Service Operators. They act as technical aids to the division sales managers and make their headquarters at the division offices.

NOT LONG AGO a piping contractor had one of those jobs that was going from bad to worse. He was discouraged and ready to quit. Furthermore, the customer was ready to have him quit. A Linde Service Supervisor appeared on the scene. He recommended a better type of welded joint. This was adopted. He suggested training a crew of welders. He outlined a plan for organizing the work; and then he withdrew. The job was finished—completely satisfactory—and ahead of time. We quote from the contractor:—

> "... In these days of so much talk of service and so little except talk, the real service you have rendered to us, to our customer and, incidentally, to the general good of the welding business, is refreshing."

Linde Service Supervisors are a part of Linde Process Service which is free to all Linde users for the asking.

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LINDE OXYGEN

YOU CAN DEPEND ON THE LINDE COMPANY

Coastwise Shipping Thrives

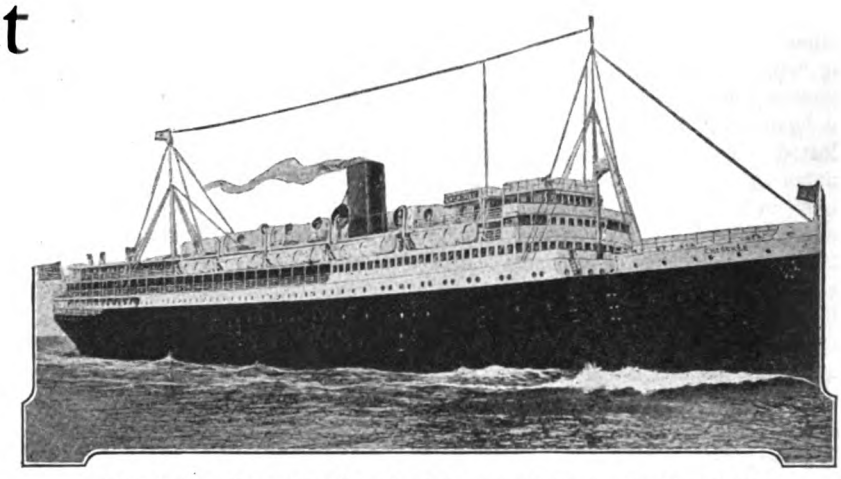
Latest Turbine Liner

Finest Product *of* American Yards *Entered Service*

New York—Carolina—Florida

July 4, 1925

BY B. K. PRICE



New turbine liner Cherokee placed in commission in the New York Carolina and Florida service of the Clyde line

SOMEWHAT over a year ago the Clyde Steamship Co. awarded a contract to the Newport News Shipbuilding & Drydock Co. for two identical modern combination cargo and passenger ships at a price of approximately $2,000,000 each. In the spring of the present year an order was given to the same yard for an additional duplicate vessel. These vessels will be used to augment and to greatly improve the present fine coastwise services maintained between New York and Carolina-Florida. The three ships have been named according to the custom of the Clyde Line after famous American Indian tribes, CHEROKEE. SEMINOLE and MOHAWK. Theodore E. Ferris is responsible for the design and supervision of construction.

Two Vessels Are Under Construction

Good progress has been made. The CHEROKEE was launched on Feb. 11, completed on June 23 and sailed July 4 on her maiden voyage in regular service from New York to Charleston, S. C., and Jacksonville, Fla. The SEMINOLE was launched on April 14 and, it is expected, will be completed and go into commission about the end of August. Launching of the MOHAWK is looked for in the early fall and she will be completed in time for operation in the coming winter schedule. Brief technical descriptions of these ships have already appeared in MARINE REVIEW for April and May. They are 402 feet long, 54 feet in beam and have a depth, to the hurricane deck of 31 feet 6 inches. With 8140 tons displacement loaded, of which 2600 tons is cargo, 1030, tons is oil fuel and 525 tons is fresh water, the draft is 20 feet. The power is one, Newport News Curtis-Brown geared steam turbine of 4200 shaft horsepower at 1800 revolutions per minute at the turbine reduced to 105 revolutions per minute at propeller, which will drive the vessel at an average speed of 16 knots. With bunker spaces full the steaming radius is 7000 miles or 20 days at a speed of 14½ knots. Scotch boilers burning fuel oil supply the steam.

Comfort, convenience and even luxury for the traveler has been provided for in an exceptional degree, on three passenger decks. There are 16 suites consisting of parlor, bedroom and bath, and 24 special staterooms. Of the 112 regulation staterooms 30 are provided with toilets and baths while all passenger quarters have hot and cold running water, electric fans and berth lights. All rooms are ventilated by a system that can be directly controlled by the occupants. The regulation rooms have upper berths of the Pullman type which allows greater freedom of movement and ventilation when unoccupied. Over 450 passengers can be accommodated, 372 first class and 84 steerage. In addition there is a crew of 117.

Equipment of Latest Modern Type

Life saving equipment is equal to the requirements for trans-Atlantic service, and consists of 10 substantial steel life boats, including a motor boat under Welin mechanical davits. There is life boat capacity sufficient for 585 persons.

The freight carrying problem has been carefully worked out in every detail. Freight decks are divided into watertight compartments, well lighted and served by large side ports for quick

handling of cargo. The holds and compartments are mechanically ventilated to give air and an even temperature under all climatic conditions for the protection and safe transportation of fruits, vegetables and other perishables.

There is a special baggage room arranged so that passengers' luggage is easily and quickly accessible at all times. Pet animals are cared for in a kennel room provided for this purpose. Automobiles can be carried and a space of 77,000 cubic feet is allotted for this purpose. The side ports in way of this space are of sufficient size to admit cars of the enclosed type. Cargo handling facilities include 12 electrically driven cargo winches and 10 cargo cranes. There are 16 cargo ports and a single overall hatch. The total cargo space amounts to 262,000 cubic feet.

In roominess and layout of deck spaces and public rooms these ships are unexcelled. There is a wide glass enclosed promenade on the upper deck forward. On the same deck aft there is a sun parlor, a glass enclosed deck-shelter, and a space for dancing. Among the public social quarters, are, reading rooms, writing rooms, smoking room, and music room and lounge with leaded glass domes and windows giving a soft uniform natural light throughout. The interior finish shows simple, good taste and perfect harmony. Effective use has been made of white mahogany with gold tones, red mahogany with gray tones, polished fumed oak and light carved ornamentation.

Merchant Marine Will Grow

It is impossible to concede that a great country like the United States with an incomparable coast line on the two great oceans of the world should not have a merchant marine. On every occasion where shipping is the subject of discussion the deplorable condition of the national merchant marine has been stressed with such apparent logic and sincerity that it has become a fixed belief in some quarters. But is the American merchant marine truly so badly off as it is pictured?

The present and future requirements of the coastwise trade are a better indication of our growth as a shipping nation than the pessimistic views so widely disseminated.

Competition is the healthiest possible condition. Only by overcoming difficulties can strength and skill come. It is fundamental in the very laws of nature that the fittest survive and success can only be attained by effort. Ease saps energy, alike in an industry as in an individual, consequently, there can be no hope of creating a virile, successful marine by public money. Coastwise shipping receives no government aid and it is freely competitive. Private enterprise, energy and initiative are responsible for its growth. The great strides in the development of this nation are due not alone to natural resources, but very materially to the quality of the human element and to free competition allowing the rewards of superior ability and effort to go to those applying them.

There is an impermanency about any shipping lines maintained out of the public funds which is in itself destructive of morale and hard earned confidence of shippers. It is difficult to think that there exists any intelligent American who uninfluenced by personal interest would not like to see American ships carry their fair share of foreign commerce; in other words for the country to be virile and efficient upon the seas as it is in pursuits ashore. It is therefore the means, by which this desirable condition may be achieved, that is the real stumbling block against an harmonious united front on the shipping question.

Free competition both advances the art of shipbuilding and improves the methods of shipping. For a healthy condition competition must not be destroyed either by economic pressure or government edict or operation through the ability of the government to operate at a loss indefinitely.

But the real crux of the matter is that there is a vast difference in effect between government aid and government protection. Domestic shipping as will be noted from the first part of this article is adding splendid new vessels to its services and also replacing older obsolete craft. It is thriving and growing and it is the real backbone of the American marine. Why—because of government aid—no, but because of government protection against foreign competition. There is plenty of competition in coastwise shipping and some of it may be unfair but at any rate the government insists that it must be between American citizens all operating under the same laws. Competition is good for any individual or any industry including shipping but it must be fair competition. It may help a pigmy to fight a giant for the experience he gets out of it but it is hardly fair competition. Unfair competition may ruin an industry, especially before it becomes lusty and strong, just as it will ruin shipping. In all friendly contests, however, equality of condition and power is stressed and if this is impossible, differences are allowed for. To see that the terms and conditions of the contest going on for a place in the foreign shipping trade, are fair and equitable is distinctly a government's duty and will be done if that government is properly performing its duties and functions. American shipping in the foreign trade needs protection just as much as coastwise shipping, more so in fact as national feeling and favoritism will run stronger where both ends of the route are populated by the same people.

Protection Not Aid is Needed

The government should therefore make it possible for Americans to compete with other nations on the high seas. There is no need to anticipate any retaliatory methods on the part of any other nation. What reasonable nation or individual could possibly take exception to a stand made clear to all in about this way. The United States is desirous of encouraging the growth of its shipping in the foreign trade. Recognizing the desire of other maritime nations to do the same and believing that competition is beneficial to the shipper and to the improvement of the art, we welcome with cordial good will the ships of all nations in our harbors. We propose however, to effect means by which the American shipowner may be placed on a basis of equality in this competition. It may be difficult to promulgate any scheme for accomplishing this which will not tend to greatly annoy other nations but it is manifestly unfair to apply a system of protection for all other industries which are in competition with the products of other lands and through such protection and our shipping laws compel the American owner to pay more for his labor and for his ships on both these counts, and then expect him to compete with a foreign shipowner with the advantages for undercutting prices his own land industries would have against American industry if it wasn't for the tariff.

Section 28 of the Jones Act of 1920 is already a part of the law of the land though it has not been placed into effect through fear on the part of shippers that freight rates might be raised and that the service, especially in certain routes, would become inefficient and inadequate, and also even more on account of the deplorable lack of unanimity of opinion

on the part of American steamship owners and interests generally on the advisability of invoking this proviso. The essence of this act is merely, that only goods brought in or sent out of the country in American ships would receive the benefit of the special low rail export and import rates now in force and that goods brought in or going out in a foreign ship would have to pay the regular domestic freight rate between the sea coast and point of destination or origin within the country.

There are no doubt hundreds of ways in which the government might help to equalize the existing disparity in basic conditions for fair competition with foreign ships. It will be sufficient to set down three or four.

1. Repeal all laws which restrict or limit the American ship owner in regard to the crew and other matters beyond such limits and restrictions as the foreign owner must meet. Let him buy his ship and make repairs in the cheapest market in the world. In other words, don't hedge the American shipowner about with rules and regulations based on our protected American standards of living and then refuse to protect him as is done today when he trys to do business.

2. Enforce *all* of our merchant marine laws in connection with foreign as well as American ships in so far as they are supposed to apply. Particularly should the differential rate of section 28 of the Act of 1920 be enforced, and the President should by proclamation place the Philippines in the coastwise category.

3. Let the government become part nominal owner in American ships against a day of possible need in an emergency, by paying to the shipbuilders the difference in cost of ships ordered in American yards and in foreign yards. This is to apply, of course only to ships that are to engage in the foreign trade. This in effect would mean that American owners would obtain just as good ships just as cheaply as his foreign competitor, so that the capital investment would be no greater, and the government would have in time a reserve that could be called upon when needed. This plan has the merit of giving service for value received.

4. That in all important strategic trade routes the government guarantee responsible American operators, the actual difference in operating costs between their ships and foreign ships with the purpose of placing them on an equal competitive basis.

5. That the government guarantee to equalize operating costs between all freight and passenger vessels owned and operated under the American flag in the foreign service and foreign competing vessels, in order to place them on an absolutely equal basis in regard to overall expenditures. This guarantee to be reckoned on the deadweight carrying capacity.

Item number one is out of the question as it would be a step backward to give up American standards adopted to give reasonable wages, working and living conditions on board. Of the several proposals stated, items two, three and five, would be a legitimate and effective way when properly worked out of equalizing (*its benefits should be limited to that point*) the operating costs with foreign competing lines.

Private Operation Only Solution

We effectively protect coastwise shipping, and vessels under the flag engaged or desiring to engage in the foreign trade of the United States are also entitled to some kind of protection. The government should of course sell its services and retire completely from the business of operating ships and thus give individual initiative a chance backed by the government to the extent of an even start, and equality of burden carried, with foreign competing lines. To keep on making good whatever deficit is piled up, as is now done for the government fleet, cannot continue and will never lead to that efficiency which will be absolutely essential under the plan proposed for protection only.

Equipment Ordered—Diesel Program

BIDS for electrical equipment for the Emergency Fleet Corp.'s diesel conversion program were opened on June 10, and awards under these bids have been made. Cutler-Hammer Co. received the order for shunt brakes for equipping 14 ships at a total price of $34,535.59. Motors and controls for equipping 14 ships will be furnished by the Westinghouse Electric & Mfg. Co. for a total of $188,722.

Proposals for supplying cargo and warping winches for 14 ships were opened on June 17. Awards were made under these bids to the Lidgerwood Mfg. Co. for 140 cargo winches at $795.00 each and 14 warping winches at $1129.00 each, or a grand total of $127,106.00.

Starting air tanks are necessary for diesel ships and bids on these were opened on June 17. Awards have now been made for four 550 cubic feet capacity tanks at $2138.00 each to Moore Drydock Co., Oakland, Calif. Newport News Shipbuilding & Drydock Co. received an order for fourteen 550 cubic feet tanks at $1850 for the first tank and $1675 each for the thirteen additional tanks making up the order, or a total of $23,625. New York Shipbuilding Corp. was awarded the contract for eight 635 cubic feet tanks at $1900 each making a total of $15,200. The grand total for all three awards came to $47,377.

Bids were opened on June 30 for furnishing the electrical cable required. Only two companies, the General Electric and the Standard Underground Cable submitted proposals. The award was made to the low bidder the Standard Underground Cable Co., at a total price of $17,297.10.

A careful study is now being made of the bids received on June 18 for furnishing pumps. Many firms bid on both the water and oil pumps. No awards have yet been made, but probably will be very soon.

Progress in the actual building of the main and auxiliary diesel engines continues at a satisfactory rate. Manager R. D. Gatewood and staff of the Maintenance & Repair division of the Emergency Fleet Corp. are busily engaged in preparing specifications for the remaining items for which bids are to be requested. These items are all of a relatively minor nature and do not govern the completion of the diesel program in any way. Work is also going forward in preparing specifications for the installation and bids will be received well in advance of the time of delivery of the first engine.

Seventy foreign-built vessels, with a total tonnage of 238,058 were purchased by Japanese interest during 1924, according to advices reaching the department of commerce from the American embassy, Tokyo. Of this number, 50 with an aggregate tonnage of 191,647 were purchased in the United Kingdom and are British-built; six were constructed in Norway, two in Denmark, and the remainder in Germany, Austria, Italy, China, but none in the United States.

Laws Retard Merchant Marine

Freedom from Hampering Legislation Necessary—Forced Uneconomic Growth Not Healthy—Provide Mail Subventions in Strategic Routes

BY CARY W. COOK
Chairman, American-Hawaiian Steamship Co.

THE legitimate function of a ship is to transport goods at a rate that will enable those who send the goods by her to carry out their business at a profit. At the same time the ship must be operated so efficiently and cheaply that whatever the goods pay in freight money will be enough to cover the cost of operation and to set aside a certain sum annually to be used in building another ship when she herself is past her efficient life.

So far as there is any record, the business of shipowning has been done by those who have found in that a better return than shore occupations afforded. The high rank of Norway as a shipping nation is due to the seafaring qualities of her people, to her geographic location, and to the fact that because of her limited industrial development, merchant shipping offers greater financial rewards and better opportunities for the employment of her people. The conditions in our New England states where American shipping originated were very similar, but with the opening of the West and almost unlimited opportunities on the land, we gave up our shipping and left the carriage of our goods to those who were less fortunately situated and who were content with a smaller return. We were not less patriotic than now. Shipping didn't pay.

No paper on shipping would be complete without a reference to the Phoenicians who have had ascribed to them the invention of the ship, but the ship feature has been dwelt upon to the exclusion of the reason for the ship-mindedness. Tyre, like England, was an island. Like Norway and unlike the United States, France or Italy, its hinterland was a narrow strip having the sea on one side and impassable mountains on the other. She produced more than her people could consume and she has to have foreign markets. There were no other shipowning peoples to carry themselves what they bought or sold, so she was perforce the pioneer shipowner, forced to it by necessity.

Those countries which have been driven by necessity to the sea and which have relied upon individual enterprise and self-reliance rather than on government bounty are today successful in shipping. Those countries which do other things better and find them easier and which do not go to sea unless guaranteed a profit by the state, hold an inferior maritime position. Belgium, which has a very large overseas trade, has been content to have most of this trade carried in foreign bottoms by those who could do it the cheapest and put her in a position to compete. To promote the export of agricultural products, Denmark for a number of years paid a substantial subsidy to lines operating to England, but withdrew it under the fear of retaliation.

Our first shipowners were primarily merchants who themselves furnished the cargoes or foundations for them and provided space for the more or less small ventures of others. The lines or public carriers were an outgrowth. The movement is being revived. The lumber mills of this coast always had their own fleets of sailing ships. The oil companies, owing to the nature of their cargoes, were forced to provide their own tankers. The steel companies first of all chartered to bring ore from abroad and have expanded into ownership and the transportation of their finished product. Our most prominent automobile manufacturer is trying out the plan of his own ships. The ownership of vessels by large industries is capable of great expansion and will expand unless some of the lines temporarily hurt by this competition should more insistently and definitely demand regulation.

Nations have gone to war and will again go to war to gain access to the sea and all the natural advantages growing out of such access and if we, with a coastline on four seas, shall nullify that advantage by attempted regulation we will forfeit our birthright and, instead of service born of free competition, will descend to a self-satisfied mediocrity in the protected coastwise trade and disappear from foreign waters.

The greatest danger to the industry from state aid is that such aid carries with it government meddling. The man who puts up the money always wants to know how it is being spent. Even mail subventions, which differ from subsidies in that they require a definite service in return, carry with them regulation and in some cases participation by the government.

It is true, and it is no wonder, that the White Star Line, which has never received aid of any kind from the British government and which has been a competitor of the Cunard Line in the transatlantic trade, has been far more successful as an earner of dividends than has its subsidized rival. This is true also of the Anchor Line, the Leyland Line, and the Red Star Line in the same trade.

Mail subventions are granted principally to insure close communication between the mother countries and their colonies. We are not a colonizing nation and our efforts along the line of subventions have been somewhat spasmodic and lacked definite purpose. With a definite policy and mail contracts for a period long enough to amortize the vessel, it is quite within the probabilities that private capital would undertake fast mail and passenger lines on major routes.

There are approximately nine million gross tons of American ships in the American coastwise trade. These coasters gave a good account of themselves in the late war and the fleet is better now than then. The definite policy of the United States reserving the coasting trade to its own vessels will not only preserve and expand this fleet without aid or regulation but, what is of more importance, preserve our shipyards, which have already given evidence of an almost unbelievable power to meet emergencies and with removal of the absurd prohibition against transfer of the flag can undoubtedly build for foreign account.

There are laws now which prevent progress. Chiefest of these are the shipping act of 1916 and the merchant marine act of 1920. A few of my shipowning friends and myself devoted much time, labor, and all the ability vouchsafed us by the Almighty's endowment of brains, to revise these two laws. The result was embodied in the shipping act of 1924,

From an address presented at the Twelfth Annual Foreign Trade Convention, Seattle, Wash., June 26, 1925.

and provides the practical man's solution of an intensely practical question. It will, I think, be seriously considered by the next congress. It conforms to this declaration of a national merchant marine policy:

It is necessary for the national defense that the United States shall have a merchant marine sufficient to carry all of its domestic commerce and serve as a naval or military auxiliary in time of war or national emergency.

It is desirable for the national defense that the United States shall have upon the major trade routes between United States ports and foreign ports combination passenger and freight lines with vessels of sufficient speed to enable them to effectively compete with foreign lines in the carriage of the mails and to serve as troop transports in time of war. Such ships to be compensated by liberal mail subventions. Any other form of aid, whether in the form of cash subsidy, discriminating duties, free canal tolls, or the like, inevitably and invariably leads to a dependence on federal paternalism in a field where individual courage and independence are demanded, and should not be granted.

It has been found by some of our large industries desirable to own their own cargo vessels in the foreign trade and this should be encouraged.

It is hereby declared to be the policy of the United States to encourage the maintenance by private owners of such a merchant marine, assuring to owners freedom from regulation or competition, direct or indirect, by the government. It is recognized that to maintain and expand a merchant marine the art of shipbuilding shall not be lost or impaired and that American shipyards must be encouraged to maintain themselves in a position to again rapidly expand to meet any national emergency. To that end no vessels except those wholly built and equipped ready for sea in American yards shall be permitted to trade between ports of the United States except the trade between United States ports and the Philippine Islands.

Except in time of war or national emergency there shall be no restrictions upon building for foreign owners, sale of American ships abroad, or selling securities of shipowners or shipbuilders abroad as long as the management through ownership of a majority of the capital stock of building and owning corporations is in the hands of American citizens.

If, under laws passed or to be passed in furtherance of the above declared policy, American shipowners enter the foreign trade with purely cargo vessels, they will be encouraged as far as consistent with the proper growth of our foreign trade; but it must be recognized that ships alone do not make foreign commerce and sentimental regard for American ships in the foreign trade must not interfere with the more important consideration of placing the exporters of our surplus in position to cultivate the friendship of foreign buyers, themselves shipowners, and to take advantage of as low freight rates as our competitors enjoy through free competition of foreign ships.

Spain Aids Shipping

According to the new contract with the Spanish government, the Compania Trasatlantica agrees to build the following vessels: Two for the service between the north of Spain and Argentine, before 1928; three similar to the MANUEL ARNUS, for the line to New York, Cuba, and Mexico, before 1929; three others for the same line, before 1932; two of 5,000 tons for the line to Fernando Poo, before 1934; three of 8,000 tons and two of the same class as the INFANTA, ISABEL and REINA VICTORIA, before 1936; and nine other vessels, Consul Julian C. Greenup, Las Palmas, Canary Islands, advises the department of commerce.

The government guarantees the interest on and amortization of the invested capital and loans in case the state's subvention is not sufficient. This subvention is fixed at 28.66 pesetas a mile and may not exceed 28,000,000 pesetas ($3,640,000). The annual sum for interest on an amortization of the loans shall not exceed the subvention.

Cannot Stand Strain of Drydocking Now

Lieut. John A. Lord, U.S.N., the naval constructor who has been assigned the task of rebuilding the U.S.S. CONSTITUTION, the famous fighting frigate, after a careful survey has reported to Rear Admiral L. R. de Steiguer, commandant of the first naval district, that any attempt to dock the ship in her present condition might result in her collapse and make her restoration impossible.

Most of the job of rebuilding OLD IRONSIDES must be done while she is afloat, for the moment that she rests on her keel and on bilge blocks in drydock the vertical pressure on the center lines of the badly decayed frigate will cause her decks to buckle, and in all probability fall to pieces. This was the fate of the old wooden frigate RICHMOND some years ago when she was placed in drydock at the Norfolk navy yard. Her decks buckled and her lines became so distorted that the navy department was forced to condemn her.

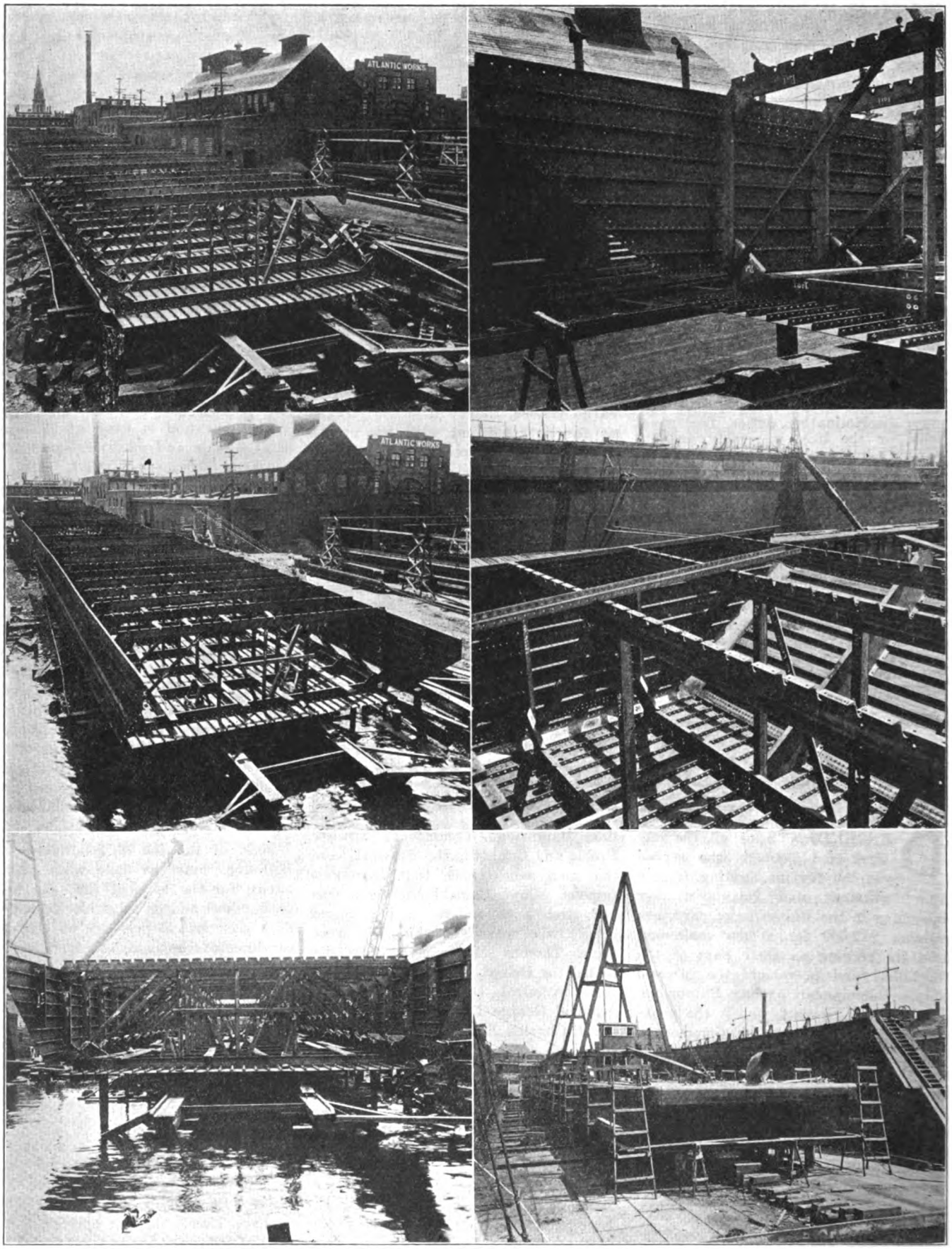
While OLD IRONSIDES is afloat the pressure is evenly distributed, and the work of rebuilding above the water line will proceed without mishap. Then, with an elaborate system of shoring her up, she can be placed in a drydock to have her hull rebuilt. Every care will be taken so that she may be fully restored to her original condition.

Save "Old Ironsides"

DESCENDANTS of all the officers and seamen who served on the famous fighting frigate OLD IRONSIDES, now rotting at her moorings in the Boston navy yard, are raising $12,000 for a new mainmast and its rigging as their part of the $500,000 fund to restore the historic ship. Commander Arthur Bainbridge Hoff, U.S.N., retired, who is the nearest male descendant of Commodore William Bainbridge who commanded the CONSTITUTION when she destroyed the British frigate JAVA off the coast of South America in 1812, is sponsor of the movement and has organized a committee to get in touch with all of the descendants of the crews and officers who served on this ship from 1797 to 1882, when OLD IRONSIDES went out of commission.

With few exceptions most of the heroes of the American navy were at one time officers on this historic vessel. Commodore Isaac Hull, Capt. Stephen Decatur, Commodore William Bainbridge, Commodore Edward Preble and Capt. Charles Stewart were the men who made OLD IRONSIDES famous. Capt. Samuel Nicholson was her first commander. Other naval heroes who served on this ship were Capt. Thomas McDonough, who defeated the British on Lake Champlain; Rear Admiral David A. Farragut, Admiral George Dewey and Rear Admiral Charles E. Clarke, who died a year ago.

Commodore Hoff requests that all descendants of officers and seamen who sailed on OLD IRONSIDES communicate with him at the third naval district headquarters, South and Whitehall streets, New York city. He hopes to organize a permanent society of OLD IRONSIDES descendants. Commander Hoff and his committee plan to form a register of all descendants under the name of the officer or seaman from whom descended as part of the exhibit when the fine old frigate is restored.



DIFFERENT STAGES OF CONSTRUCTION OF THE CHANNEL STEEL BARGES BUILDING AT THE ATLANTIC WORKS EAST BOSTON.—UPPER LEFT, SHOWS BOTTOM BUILT OF CHANNELS RIVETED SIDE TO SIDE—THE TWO VIEWS BELOW SHOW SIDES IN PLACE—UPPER AND CENTER RIGHT, GIVE A CLOSE UP OF THE STRUCTURAL FEATURES—LOWER RIGHT SHOWS THREE BARGES PRACTICALLY COMPLETED IN DRY DOCK FOR PAINTING AND FINISHING TOUCHES—TAKEN LATE IN JULY

New Barges Built of Channels

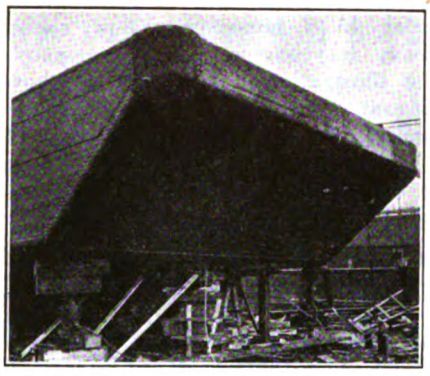
Channels Riveted Side to Side—No Packing Between Flaying Surfaces—Cost of Construction Less Than for Wood—Proven Entirely Watertight

BY G. S. CLARK

LIGHTERAGE barges, with very few exceptions and except those that are self-propelled have always been built of timber. This includes covered and refrigerator bargers, lighters with power and hand hoisting, and open deck scows. The wood construction has followed a practically standard design and boats have been built of varying quality of different kinds of timber. The life of barges in New York harbor has averaged about 17 years before being rebuilt and about 8 years after being rebuilt, or a total life of 25 years. If properly back painted this average life could probably be extended about 10 per cent.

Steel construction, that is with plates, has been used in barge design since liquid bulk movements have been undertaken. Many different designs of this class of construction are in service in New York harbor and they are giving complete satisfaction to their owners. Channel steel construction of this type of vessel has been tried with the use of fillers and other caulking, but they have all been bolted jobs.

The New York Central railroad has been making a study of the possibilities of steel construction as applied to barges, and other harbor craft for a period of years and after a complete investigation decided that the type of channel steel construction known as the Ellis system gives all the necessary attributes to qualify it for use in the design of small equipment, suitable for rail-



END VIEW OF BARGE BUILT UNDER ELLIS CHANNEL STEEL CONSTRUCTION

road lighterage service. Consequently this type of construction was approved for 10 hoisting lighters now under construction for the railroad.

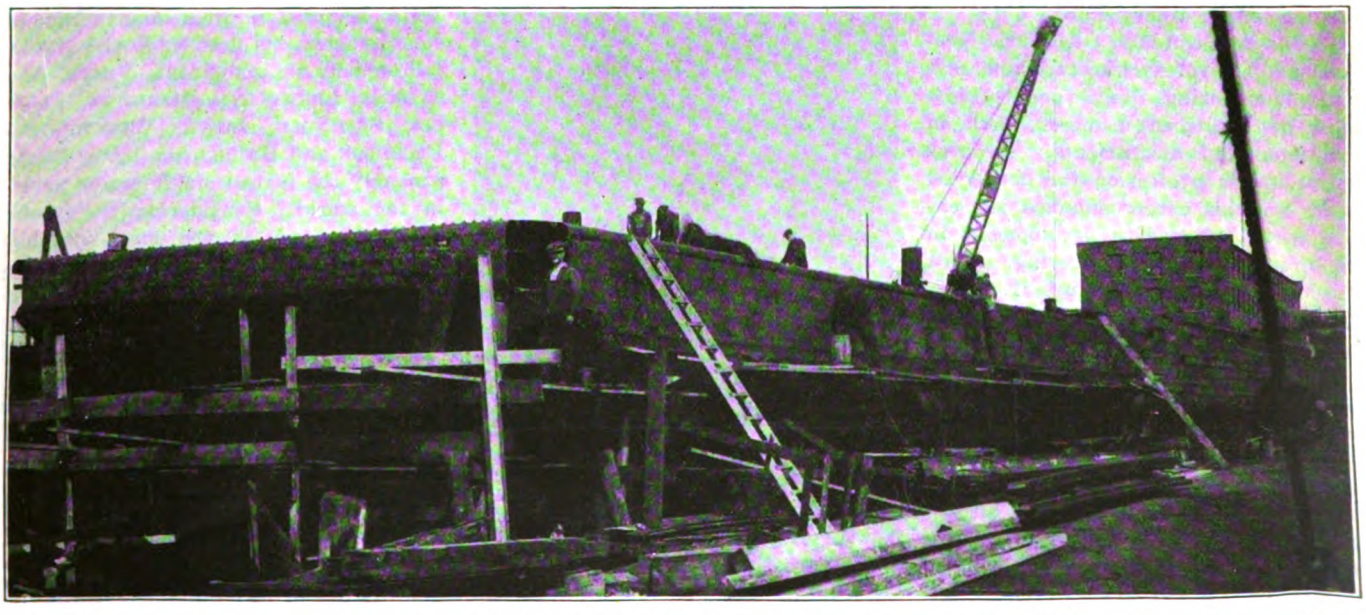
This represents the first really practical adoption of channels riveted side to side without any packing or filler between. The design calls for a rivet spacing of five diameters center to center. Channels are ordered rolled to full length so that no splicing or welding is necessary.

It is readily seen that if properly carried out, the construction is more economical than other types of steel and is stronger in design than are the others. The jars and strains to which barges are subjected, can be taken care of more satisfactorily by the use of channels than by plate construction, and damage and maintenance repairs can be made with less expenditure.

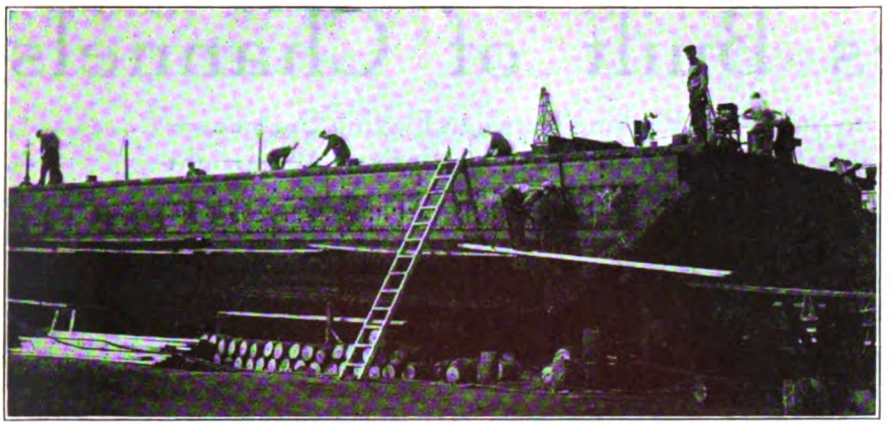
The channels are of structural rather than ship section. In the job now under way 12-inch channels are used. The sides, ends, bottom and deck are riveted at different locations and the entire boat is assembled by crane. The punching and cutting is done by machinery and the riveting is done with a 50-ton bull riveter. These bull riveters are also used in pressing out any little unevenness in the channel flanges.

They are air driven and were specially designed and built for this work by the shipyard. The operator can more than keep two men busy feeding. This explains why this type of boat can be built cheaper than other steel designs, and in somewhat less time.

The author is assistant to the manager of the marine department of the New York Central railroad.



TWO CHANNEL STEEL CONSTRUCTION BARGES IN PROCESS OF ERECTION AT THE ATLANTIC WORKS, EAST BOSTON, MASS.—BOTTOMS, SIDES, ENDS AND DECKS BUILT UP IN SEPARATE CONVENIENT LOCATION AND THEN MOVED INTO PLACE BY CRANE IN ASSEMBLING



A CLOSE UP OF ONE OF THE ASSEMBLED BARGES—THE WIDE FLAT PLATE ON THE SIDE IS A GUARD OR RUBBING STRAKE AND IS RIVETED TO THE CHANNEL WEBS WHICH FORM THE SIDE OF THE BARGE

The boats being built for the New York Central railroad are now under construction at the shipyard of the Atlantic Works, Inc., East Boston, Mass. They are gas hoisting lighters with A-frame derrick and the power is furnished by single cylinder 15-18 horsepower slow speed, heavy duty engines. The accompanying illustrations taken May 21 show several of the barges during the course of construction at the yard of the builders. It is said that there is more riveting in this type of construction than with the usual plating. But the riveting is so much easier that the labor costs are less. The boats which have been launched have proven absolutely watertight and have withstood all tests of this kind. Three of them will reach New York harbor late in July, and one of them will be turned over to the shipyard and patent owner for exhibition purposes the day and date to be set later. This will afford a view of this interesting departure from "good ship practice."

After sufficient experience has been had with this type of equipment, a statement will be published giving the results of a steel boat which costs less to construct than timber, which tows easier than a timber boat, which will have a life of 50 years over the present 25, which will have maintenance costs much less than timber or other steel designs and which will probably reduce insurance premiums, as it has the approval of the American Bureau of shipping.

Henry J. Gielow—1855-1925

HENRY J. GIELOW, the well known New York naval architect, died suddenly at Detroit, June 24, 1925. He was 70 years of age. He made the trip to Detroit to look over numerous changes and alterations under way at the Detroit plant of the American Shipbuilding Co. to the yacht SIALIA, originally designed by him for Horace E. Dodge and now owned by Henry Ford.

In the death of Mr. Gielow the profession of naval architecture and marine engineering loses one of its most distinguished members, both in character and attainments. He was active in his profession for nearly 50 years and his career spanned the entire period of modern development in the art of marine engineering. Born in Manitowoc, Wis., Aug. 1, 1855, he showed from his earliest years a keen interest in scientific and practical work in connection with the design and building of boats. In his studies he stood particularly high in mathematics and applied sciences.

On the completion of his school work in the middle of the seventies he entered the service of the government and for 13 years rendered valuable service to his country. During this period he continued his studies and independent investigations, particularly in steam engineering. He also devoted a great deal of study to the form of vessels, dveloping a theory of steam lines which he later tested with a glass model and proved to be correct. After his tenure with the

THE LATE H. J. GIELOW

government Mr. Gielow located in New York and devoted all his time to the practice of his profession. In his earlier years in New York his professional work consisted largely in designing vessels and machinery for commercial purposes.

About this time he also designed a number of dredges and their machinery. Among his other commercial successes are the five ferry boats of the Key Route plying between San Francisco and Oakland. These vessels make a speed of 17⅝ statute miles in regular service, they run 18 hours a day and have never had a breakdown or failure of any kind

He designed a great many famous steam yachts, his first being the NYDIA followed by the THERESEA, VESTA, ALBATROSS, LLEWELLYN, MARIETTA, FELICIA, SEMINOLE, LINTA, WINCHESTER, ELGRUDOR and HAUOLI, the latter being probably the fastest single screw yacht in the world. Considering the problems met, one of the most notable vessels built from Mr. Gielow's designs is the brigantine CARNEGIE, the nonmagnetic ship used in the famous researches about the magnetic pole.

The DELPHINE, the largest steam yacht in tonnage measurement built in the United States, was designed and constructed under Mr. Gielow's supervision by the Great Lakes Engineering Works for Mrs. Horace R. Dodge.

Although Mr. Gielow was wrapped up in his professional work, he still found time to be keenly interested in all the scientific questions of the day, being remarkably well informed on many varied subjects.

Handling of Bids for Vessels To be Scrapped Is A National Disgrace

Shipping Board and Emergency Fleet Are Again at Odds

Divided Authority Leads to Incompetent Management— Steps Under Way To Do Away With the Shipping Board

RECENT negotiations in connection with the sale for scrapping of 200 government-owned vessels again demonstrates how futile it is to expect anything but the most unbusinesslike action from the shipping board and its appendage, the Emergency Fleet Corp. The muddling of affairs coincident with the receiving of bids for these ships brought out anew the extent to which government handling of shipping can be bungled.

Complications arising from the method of handling the bids advertised for receipt on June 30 and July 16 resulted in having the whole matter involved in legal technicalities, because of making public the bids and then reconsidering them later to include other bids. To make public bids which have been rejected is unethical to say the least. Henry Ford's bid of $1,706,000 for the 200 shipping board vessels provoked a flare-up that threatened to bring on a new crisis in the affairs of the board. Ford's bid was one of the 13 new proposals submitted as a result of the failure of the board to sell the ships to the Boston Iron & Metal Co., of Baltimore, although recommended to do so by President Palmer, of the Fleet corporation, who was delegated by President Coolidge to handle sales negotiations single-handed in the interest of speeding up the work of getting the government out of the shipping business as soon as possible.

It was found that Ford's offer on July 16 exceeded the offer of $1,370,000 made by the Boston Iron & Metal Co. on June 30. Communications were then filed with President Palmer on behalf of the Baltimore concern and the Waterside Salvage Co., of New York, protesting against the action of the board in allowing firms or individuals to submit bids who were not represented in the first proposals opened on June 30.

Most of the members of the board were out of the city when President Palmer sent in his recommendation to award the contract on the basis of the bids opened June 30, and the hastily called and poorly attended board meeting rejected his judgment. The criticism of the Boston Iron & Metal Co. and others over the bungling of the bids seem to be justified in that such action worked to the disadvantage of those who had submitted bids on June 30 and to the advantage of those permitted to submit bids up to July 16. It is contended, with considerable basis of common sense, that at least the amounts of the June 30 bids should have been kept secret until negotiations had been completed under the terms of the advertisement. At any rate the complaints which developed had to be referred to the board's legal counsel to be untangled.

After the Ford bid, and a number of others, none of which was as high as the Ford bid, except that of $2,440,000 by A. B. Wilson, representing the Ocean Power Co., of Bar Harbor, Me., which was not regarded seriously because it was unaccompanied by a certified check for a part of the amount, Admiral Palmer announced that recommendations would again be made for the board's approval.

The Ford bid was handed to Chairman O'Connor, of the shipping board, by W. B. Mayo, of the Ford Motor Co., dated July 16, with the check for $175,000 accompanying the bid dated July 7. Ford was not among the bidders when the first bid was opened June 30, but it was said in Detroit at the time that a bid had been mailed, but it never was discovered at the board's offices. It developed that the Ford offer actually was not made until later.

The Waterside Salvage Corp. submitted a bid June 30 for one vessel and asked for negotiations to discuss the disposal of the remainder of the 200 ships. This concern, which protested against the method of making public the offers and then rejecting the highest bid to receive additional ones, warned the board not to accept any bid until it had negotiated with it on the bid submitted June 30.

Several members of congress have denounced openly the dilly-dallying methods of the board in pursuing the settled policy of the government to facilitate by every means the removal

Ford's Offer Not Yet Accepted

Admiral Palmer on July 21 recommended to the shipping board that the Ford offer of $1,706,000 for 200 vessels for scrap made July 16, be accepted. Counsel for the board holds that publication and rejection of the first bids received June 30 and again advertising for bids which were received and made public July 16 is entirely legal in spite of protests made. The shipping board did not meet on July 23 as intended to consider Admiral Palmer's recommendation, because they were unable to agree, some members holding that to sell for scrapping is illegal under the merchant marine act. So the muddle continues and will continue as long as seven political appointees are in charge.

of Uncle Sam from the shipping industry. Senator Fletcher, of Florida, stated that it looks as if the shipping board had fallen a victim to "sharp practices." "Individually, members of the board seem to be good men," he said. "Collectively, they seem unable to get results. Only three members of the board were on the job when the recommendation on the bid was made. Why were not the members on the job at this critical time?"

Representative Robert L. Bacon, of New York, who is preparing to introduce a bill in the next congress to do away with the shipping board and to transfer the Emergency Fleet Corp. to the department of commerce, stated that if his hopes are accomplished the sale of government-owned merchant vessels to private shipowners would be facilitated, and that the day when the government would be out of the shipping business would be in sight. Representative Bacon is a member of the house committee on merchant marine and fisheries, and others of both houses of congress are contemplating bills of similar nature.

Strong sentiment is growing in favor of abolishing the shipping board. The view is being taken that the existence of unnecessary boards and bureaus is one of the dangerous tendencies of the federal government. The need is seen at present to repeal some of the laws which have set up multifarious bureaus and divisions. It is considered that a good beginning would be to repeal the law creating the shipping board. In the next session of congress, the shipping board will be placed on the rack for some gruelling inquisition. It will be brought out that no real progress can be made in carrying out the policies determined upon by congress and President Coolidge as long as the shipping board remains in existence.

Of the proposals for the purchase of the 200 vessels opened on July 16, ten were revised drafts of bids opened June 30. Three were from concerns that did not participate in the original advertisement. Of those bidding, aside from the Ocean Power Co. and Mr. Ford, only two offered to buy all the ships. Frank Harris Sons, Inc., of Chicago, offered $1,250,000 plus 50 per cent of proceeds from the sale of scrapping, and August A. Wesser and Dan Robbins, of Buffalo, bid $650,000 for the 200 ships. Among the bids opened was one from the Union Shipbuilding Co., Baltimore, offering $9100 each for 50 ships in the James river. The same concern had bid $6000 each for 50 ships on June 30.

Mr. Ford offered to begin accepting the ships within 30 days, and to complete scrapping within 18 months. He asked that for vessels included in the 200 that are tied up at Gulf ports there be substituted vessels of like types at Atlantic ports north of the James river, inclusive, so that delivery of ships would be made on the Atlantic. Ford also wished to negotiate for any power equipment and machinery that might be useful in the Ford plants, and for the dieselization of any of the 50 vessels of type 1023 for ocean operation.

U. S. Coastwise Laws Must Prevail

THE interstate commerce commission recently ruled that the right of the Northern Navigation Co., Ltd., a Canadian Great Lakes steamship line, to participate in transportation between United States points would have to be decided by court action.

A year's study has been given the question. Chairman Atchison and Commisioner McManany dissented, holding that the commission should have settled the question.

Under the American law, water borne commerce between United States points is a monopoly to American owned vessels. Exception is made, however, in case of transportation on the American continent over "routes heretofore recognized by the interstate commerce commission when such routes are in part over Canadian rail lines and water facilities."

Shipping Board Demands Exclusion

Shippers generally at Great Lakes ports asked that the Northern Navigation Co. be permitted to compete with American companies, while the Shipping Board and American Great Lakes carriers demanded that the Canadian company be excluded. The majority of the commission held that there had been raised "a question of fact to be determined by the courts" and said that the duty "of administering the merchant marine act does not rest upon us and it is not within our province to construe its provisions."

Most of the Northern Navigation Co.'s service is rendered by boats plying between Duluth, Minn., and Sarnia, Ont., a port on Lake Huron. The freight which it carries is in most cases originated by railroads in Canada or the United States and delivered to railroads, so that its freight charges are filed with the interstate commerce commission in joint schedules, by which the railroad and the water line make up what are known as rail-lake and rail rates.

Committee To Continue Study

The shipping board joined with the Great Lakes Transit Corp., in asking the interstate commerce commission to order these joint schedules cancelled, which action would have resulted in outlawing the Canadian company's business so far as the movement of freight between United States ports was concerned.

Shippers in New England and Minnesota alike intervened in the proceedings to oppose the shipping board's demand, while the transit company representatives argued that American vessels obliged by law to go to more expense than the Canadian would be unable to maintain competing service.

The commission conceded that the joint rail-lake and rail tariff had been filed with it, but refused to state whether it considered the Canadian company's facilities constituted "an established route" under the law.

June Lake Levels

The United States Lake Survey reports the monthly mean stage of the Great Lakes for the month of June, 1925, as follows:

Lakes	Feet above mean sea level May	June
Superior	600.94	601.22
Michigan-Huron	578.42	578.44
St. Clair	573.74	573.73
Erie	571.30	571.19
Ontario	245.65	245.42

Lake Superior is 0.28 foot higher than last month, and 0.01 foot lower than a year ago. Lakes Michigan-Huron are 0.02 foot higher than last month, and 0.95 foot lower than the low June stage of a year ago. Lake Erie is 0.11 foot lower than last month, and 1.11 foot lower than a year ago. Lake Ontario is 0.23 foot lower than last month, 0.85 foot lower than a year ago, and 1.18 foot below the average stage of June of the last ten years.

The Canadian National railways are inquiring for two car ferries involving 2000 tons of steel each.

Use Clean Fuel in Oil Engines

Latest Designs Permit Use of Heavier Fuel—Impurities Must be Removed—Cheaper, Easier to Obtain and has Greater Heat Value

BY LEE H. CLARK
Engineer, Sharples Specialty Co.

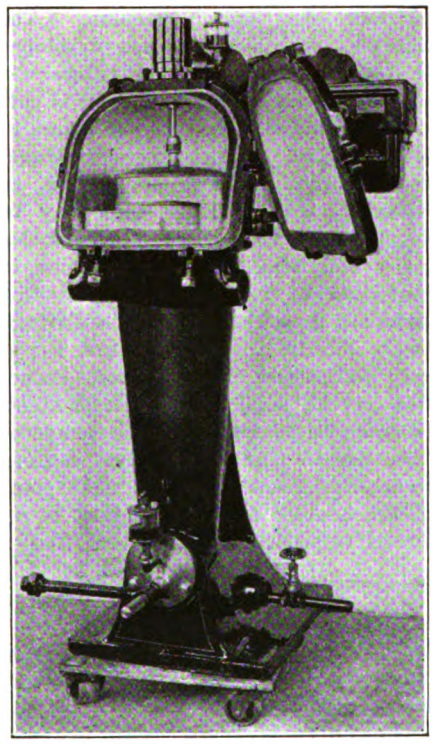
NO DIFFERENCE of opinion should exist in regard to the distinct advantages to be gained by using heavier boiler fuel oils in oil engines instead of being limited entirely to the use of the lighter oils, provided heavy oil can be used with reasonable facility and without detriment to the wearing parts of the engine. The off hand and general impression is that it cannot be done. It may be worth while to look into this question to see whether this impression is well founded.

Heavy fuels are lower in price and, by volume, on which basis they are sold, have a somewhat greater heat value. The lighter oils are not always readily available on the market. Thus it is desirable that an engine be able to burn whatever fuel oil may be procured at any port the ship may enter. The motor ship that is compelled to burn only lighter oils is frequently forced to carry a large supply and so sacrifices valuable cargo space. Representatives of the oil engine industry, users of oil engines, and oil companies, indicate a marked preference for fuel ranging from 24 degrees to 36 degrees Baume for oil engine use. In a few instances a lower limit of 20 degrees Baume is accepted as satisfactory. A few manufacturers express the belief that their engines will operate effectively on any burnable fuel.

Cheaper And Easily Obtained

Considering that the heavier oils are cheaper and are almost always easier to obtain in quantity than the lighter Diesel fuels, what are the reasons for the almost universal demand for oils between 24 to 36 degrees Baume for Diesel fuel? In the past, certain well founded objections have been advanced to the use of the heavier fuels in Diesel engines. These objectives may be enumerated, 1, difficulties in handling oils that are viscous at normal temperatures, 2, ignition difficulties, 3, difficulties in burning oil after ignition, 4, difficulties caused by the presence of small quantities of impurities in the oil.

The difficulties listed under the first three headings can, and are being overcome in the design of engines and in fuel storage and handling systems, and by an understanding of the proper variations necessary in operation to change engines from the use of the lighter to the heavier fuels. It is not possible to overcome the difficulties due to impurities in the oil burned in the same manner. The removal of impurities constitutes an entirely separate problem. Failure to appreciate this distinction has been responsible for attributing many troubles caused by poor operation and



CENTRIFUGE OF ENCLOSED PRESSURE TYPE SUITABLE FOR CENTRIFUGING OILS AT HIGHER TEMPERATURES

design to foreign matter present in the heavier oils.

There is ample evidence that many engine manufacturers have solved the problem of producing Diesel engines that are mechanically capable of burning the heavier oils without difficulty. The majority of the larger engines now being put in service are adapted to burn the heaviest fuels, if such fuels are sufficiently free from impurities. The same is not true of some types of engines, particularly those of older design, and it is illogical to expect an engine not designed for them to operate effectively upon the heavier oils, even though such oils are well purified before use.

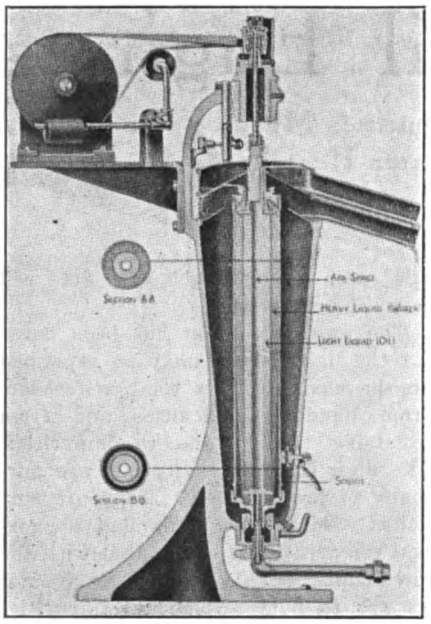
The preference that has been noted for the lighter fuels may be explained on the basis of their relative freedom from handling difficulties and from excessive trouble due to impurities. The high Baume gravity oils are normally of low viscosity. They are sufficiently mobile for pumping, at normal temperatures. Compared with the low Baume gravity fuels, they are not as apt to hold mechanical impurities in suspension, first, because of their lower viscosity, secondly, because there are greater differences in the specific gravities of the oils and those of the impurities.

Purification Has Advantages

As a result of these conditions, a large part of any water and solid impurities settle by gravity while the lighter oils are in storage tanks. Various types of filters have been used to remove impurities that do not settle by gravity. Centrifugal treatment is, however, more efficient than either gravity sedimentation or filtration, as can be shown by the impurities removed centrifugally from oil even after the two former methods of purification have been used. Even where it is necessary to heat the lighter oils to obtain a more ready purification, moderate temperatures are sufficient.

Experience has proven that oil, between the limits of 24 to 36 degrees Baume will burn well in most engines without giving rise to undue maintenance charges. It should not be assumed from this, however, that an efficient purification device cannot be used to advantage to still further improve combustion and eliminate engine wear. The centrifugal is the most efficient apparatus for this service since it removes impurities more completely than either the filter or gravity settling tanks. Its operation is not complicated by filter media and does not result in accumulations of sludge or emulsions that result in oil loss, that are difficult to handle and of which it is troublesome to dispose.

The desire to use oil of any gravity in Diesel engines has probably done more to impress the oil engine user



SECTIONAL VIEW OF THE SUPER CENTRIFUGE

with the necessity for the purification of all fuel than any other factor. For the reasons outlined above, use of the lighter Diesel fuels was sufficiently free from operating difficulties to cause little concern regarding impurities in the oil. Early attempts to burn boiler fuels were attended with the difficulties that have been listed and, after eliminating the various troubles occasioned by engine design, it is now realized that the presence of impurities in the oil is responsible for poor operation and excessive wear in the engine.

In the past few years, a great number of motor ships have been equipped with centrifugals for the purification of fuel before burning. No difficulty has been found in effecting very complete elimination of harmful suspended impurities at high capacities when working upon fuels about 18 degrees Baume and above. In handling the majority of fuels below this gravity, the fuel is much improved but it has been felt that the centrifugals were not as effective as they are with lighter fuels.

In order to effect an entirely satisfactory purification of oils, except those that are very light, it is necessary to heat the oils before centrifuging. The temperature employed for centrifugal operation depends on the viscosity of the oil and the extent to which this viscosity must be reduced before satisfactory results can be obtained by centrifugal treatment. To centrifuge an oil with a gravity in the neighborhood of 30 degrees Baume a temperature of approximately 120 degrees Fahr. is usually sufficient. To handle the majority of oils having a gravity below 20 degrees Baume it is highly desirable that temperatures ranging up to 210 degrees Fahr. be obtained. A temperature of about 150 degrees is often very close to, if not above, the flash point of many of these oils, and, with the ordinary centrifugal, one of the chief difficulties previously encountered has been the danger from escaping fumes that are developed when heavy oils are heated sufficiently hot for satisfactory centrifugal treatment. This is, of course, a serious disadvantage on shipboard.

As a result, the maximum efficiency has not been obtained in using the open type centrifugal on heavy fuels, since it has been compulsory to operate with oil at temperatures below that necessary for the best results.

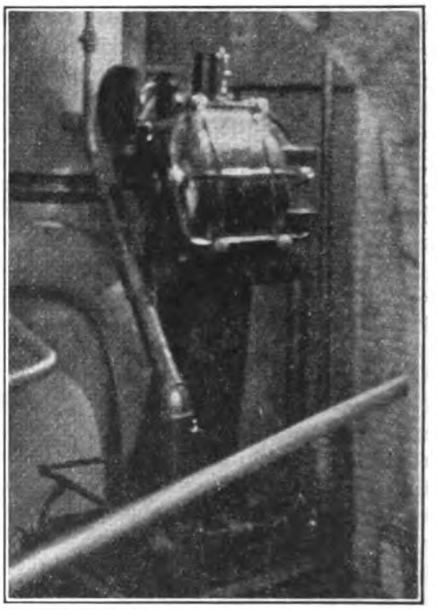
To overcome the temperature limitations imposed upon treatment of fuel oil with the open machine. The Sharples Specialty Co. has developed the presurtite super centrifuge in which the centrifugal operation is carried out in a totally enclosed frame or housing within which the centrifugal bowl rotates. This frame is built to withstand any pressure that may be developed by gases from hot oil. No gases may leak from the machine to constitute a fire hazard. With this machine it is possible to centrifuge heavy oils at the temperature necessary to procure a satisfactory reduction in the solid and water content. Oil may be centrifuged at a temperature up to and above 200 degrees Fahr. often well above the flash point of the heavier fuel oils, if that is required to secure a satisfactory fuel.

Centrifuging Efficiency Doubled

To illustrate the advantage in heating the heavy fuels, an example of tests run on a 16 degrees Baume bunker C oil with a flash of 150 degrees Fahr. is interesting. At 140 degrees Fahr., the oil had a viscosity of 16.3 degrees Engler. Heated to 170 degrees Fahr, the viscosity was reduced to 8.0 degrees Engler. Thus, elevating the temperature by 30 degrees Fahr. above that at which the oil could be handled in the open centrifugal reduced the viscosity of the oil by one half, making it possible to double the efficiency of centrifugal operation.

Those impurities in fuel oils that have been blamed to the greatest extent for poor engine operation when the heavy oils are burned, are water, non-combustible material and sulphur. Water, if present to any appreciable extent, is usually found in pockets in the oil, and consequently causes misfiring and erratic working of the engine. Finely divided water to the extent of several per cent, distributed homogeneously through the oil, will cause no difficulty. The governor will automatically admit to the cylinders a slightly greater charge of such oil than of perfectly dry oil. Each stroke will be a repetition of the last. The engine will run smoothly and burn the oil cleanly. Water in pockets results in great variations in combustion conditions. The engine may be running smoothly on practically dry oil when the fuel pump suddenly draws a mixture that may consist principally of water. The result will be a feeble stroke, or even a complete misfire. Even with a certain amount of oil present in the charge, a misfire may result. The unburned oil then mixes with the lubricating oil on the cylinder walls and so contaminates the lubricant. When large amounts of water enter the cylinders with the oil, the engine loses speed, so that on the next stroke the governor admits an increased charge and until operation is again regular, the engine runs under overload conditions.

This irregular firing is responsible for the formation of carbon in the cylinders and in extreme cases, may cause seizure of the piston. Irregular firing may be detected by watching



A SUPER CENTRIFUGE OF THE PRESSURE TYPE FOR DIESEL FUEL OIL ON THE M. S. CUBORE

the exhaust, which will smoke intermittently when burning fuel oils containing water that is irregularly dispersed in the oil.

The non-combustible material in fuel oil is, in part, abrasive in nature and as such may cause very serious wear on cylinder liners and pistons. The most common impurities are sand and

rust from pipes and storage tanks. The amount of these impurities that is introduced into the cylinders per stroke is very small, but it amounts to a great deal in the course of a few months running. When the oil is burned, the coarser of these impurities deposit in the cylinders and form an errosive paste with the lubricating oil. Examination of this material, when collected from the oil by centrifuging, leaves no doubt as to its abrasive qualities and the part that it plays in increasing operating cost and diminishing the reliability of the engine.

The presence of water and suspended solids is not confined to any particular type of oil. Distilled oils are free from these immediately after production, but the impurities are rapidly introduced in handling and in storage.

Sulphur is found principally in the lower Baume gravity oils. The objections often mentioned to the use of high sulphur oils undoubtedly arises from the fact that these oils are the viscous fuels which do not free themselves readily of suspended impurities. Sulphur burns to sulphur dioxide which is unquestionably noncorrosive under the conditions existing in the engine while running. It is only when the engine is stopped without first flushing the burnt gases from the system that the sulphur dioxide may combine with the condensed water and become corrosive. The use of lighter oils of low sulphur content before stopping is often practiced to remove the heavier oils from pump and lines where it might solidify and cause trouble in restarting. This is desirable since it removes the potentially corrosive sulphur gases.

World Shipbuilding at Lowest Ebb

A NEW low record in world shipbuilding since the late war is shown by returns covering all maritime countries for the quarter ended June 30 last, according to Lloyd's Register of shipping. Increases in tonnage orders in the past quarter, as compared with the previous one, shown by the shipyards of the United States, Italy, Japan, and some of the smaller shipbuilding nations, were more than offset by the decreases in Great Britain and Ireland, Germany, France, Holland and Denmark. The general contrast between the two last quarters is shown by the following table, the figures representing gross tons of shipping:

	June 30, 1925	Mar. 31, 1925
United States	92,001	81,728
Britain and Ireland	1,093,587	1,165,468
Other countries	1,184,243	1,149,714
World total	2,369,831	2,396,910

The previous low mark, of Sept. 30, 1923 showed a total of approximately 99,000 gross tons for the United States, 1,271,000 tons for Great Britain and Ireland, and 1,007,000 tons for all other countries combined, making the world total at that period, 2,377,000 tons, so that the present decline from that figure is not a sharp one.

If compared, however, with 2,616,000 gross tons for June 30, 1924, the decline has been a steady one.

The decrease is accompanied by a falling off in orders for steam tonnage. Again, the figures for construction of vessels equipped with internal combustion engines show an advance, so that now almost 50 per cent of the world's shipbuilding is composed of motor vessels. In Great Britain and Ireland motorships represent 36.5 per cent of the total construction, while the figure for other maritime countries is 57.3 per cent, making the proportion for all countries combined

Shipbuilding in American Yards-June 1, 1925

On June 1, 1925, American shipyards were building or under contract to build for private shipowners 139 steel vessels of 167,059 gross tons compared with 140 steel vessels of 226,926 gross tons on May 1, 1925, according to the bureau of navigation, department of commerce.

There were 26 wood vessels of 9840 gross tons building or under contract to build for private shipowners during the same period compared with 27 wood vessels of 10,890 gross tons on May 1, 1925.

To the right is a summary of reports of shipyards to the bureau of navigation, department of commerce, showing the number and gross tonnage of steel and wood vessels of 100 gross tons and over, under construction or contract for private shipowners on June 1, 1925.

Company	Steel No.	Steel Gross	Wood No.	Wood Gross
Alabama Dry Dock & Shipbuilding Co., Mobile, Ala.	1	650	....	.....
American Bridge Co., Pittsburgh	42	19,280	....	.....
American Car & Foundry Co., Wilmington, Del	....	.....	4	1,800
American Shipbuilding Co., Cleveland	1	8,300	....	.....
Bethlehem Shipbuilding Corp., Ltd.				
Union Plant, Bethlehem, Pa.	4	2,700	....	.....
Harlan Plant, Wilmington, Del.	2	1,353	....	.....
Sparrows Point Plant, Sparrows Point, Md.	3	4,850	....	.....
Canulette Shipbuilding Co., Slidell, La.	1	500	1	130
Charles L. Rohde & Sons, Baltimore, Md.	....	.....	4	1,269
Charles Ward Engineering Works, Charleston, W. Va.	1	245	....	.....
Craig Shipbuilding Co., Long Beach, Calif.	1	650	....	.....
Defoe Boat & Boiler Works, Dubuque, Iowa	2	440	....	.....
Dravo Contracting Co., Pittsburgh	20	8,510	....	.....
Geo. Lawley & Son Corp., Neponset, Mass.	....	.....	1	150
Great Lakes Engineering Works, River Rouge, Mich.	2	16,450	....	.....
Hanlon Dry Dock & Shipbuilding Co., Oakland, Calif	1	250	....	.....
Howard Shipyards Co., Jeffersonville, Ind.	4	2,095	....	.....
Ira S. Bushey & Sons, Brooklyn, N. Y.	....	.....	2	200
Jacobsen & Petersen, Brooklyn, N. Y.	....	.....	2	500
Kingston Dry Dock & Construction Co., Kingston, N. Y.	....	.....	1	250
Kyle Shipyards, T. A., City Island, N. Y.	1	250	....	.....
Los Angeles Shipbuilding & Dry Dock Corp., San Pedro, Calif.	3	712	....	.....
Manitowoco Shipbuilding Corp., Manitowoc, Wis.	1	5,800	....	.....
Marietta Manufacturing Co., Point Pleasant, W. Va.	9	3,174	....	.....
Nashville Bridge Co., Nashville, Tenn.	10	*2,580	....	.....
Newport News Shipbuilding & D. D. Co., Newport News, Va.	9	38,405	....	.....
New York Shipbuilding Corp., Camden, N. J.	7	12,960	....	.....
Orange Car & Steel Co., Orange, Texas	3	3,250	....	.....
R. Lenahan Co., Kingston, N. Y.	....	.....	10	*4,946
Spedden Shipbuilding Co., Baltimore, Md.	1	325	....	.....
Staten Island Shipbuilding Co., Staten Island, N. Y.	5	3,580	....	.....
Sturgeon Bay Dry Dock Co., Sturegon Bay, Wis.	1	3,500	....	.....
Sun Shipbuilding Co., Chester, Pa.	2	600	....	.....
Supple & Martin Shipbuilding Co., Portland, Oreg.	....	.....	1	595
Wm. Cramp & Sons Ship & Engine Co., Philadelphia, Pa.	2	25,650	....	.....
Total	139	167,059	26	9,840

*Approximate.

47.7 per cent, as compared with 42 per cent for the quarter ended March 31 last, and only 28 per cent a year prior to that. The tonnage of motorships building during the past two quarters compares as follows, in gross tons:

	June 30, 1925	Mar. 31, 1925
Britain and Ireland	399,070	359,920
Other countries	730,842	661,711
World total	1,129,912	1,021,681

It will be noticed that, while on construction of all kinds, Great Britain and Ireland's share is nearly half the world's total, they are constructing only a little more than a third of the total motor tonnage.

Total Horsepower In Diesels Increases

Data showing the indicated horsepower of marine engines now building or being installed throughout the world shows that out of a total of 1,721,378 indicated horsepower, 353,144 represents the aggregate for steam turbines; 559,970 for reciprocating steam engines, and 808,264 for motor propulsion. The indicated horsepower for motor-driven vessels is therefore only 100,000 indicated horsepower less than for steam turbines and steam engines combined.

Another sign of depression is seen in the fact that of the 1,093,000 gross tons of orders with the shipyards of Great Britain and Ireland, suspension of work has been ordered on 76,000 tons.

The comparison between new orders and launchings of steamers and motor vessels is not quite so pronounced, however, for the quarter just ended as for the previous one. During the three months ending June 30, launchings exceeded new work begun by 171,000 gross tons, while during the three preceding months, ships sent down the ways exceeded those on which work was started by more than 210,000 tons. The comparative launchings for the two periods, were as follows, in gross tons:

	June 30, 1925	Mar. 31, 1925
Britain and Ireland.....	297,517	338,790
Other countries	295,770	267,431
World total	593,287	606,221

The sharp decrease in the amount of tonnage launched by British shipyards, contrasts with the increase for other countries. This decrease for Great Britain and Ireland and increase for the other maritime nations is also apparent in the comparative figures of new work commenced during the two quarters, as shown in the following table of gross tonnage:

	June 30, 1925	Mar. 31, 1925
Britain and Ireland	187,445	198,152
Other countries	234,669	196,818
World total	422,114	394,970

One direction in which Great Britain and Ireland gained during the last quarter, while other countries fell back, was that of tanker construction. The gains of the shipyards of Great Britain and Ireland during the quarter ended June 30 were 43,000 tons, as indicated by the following table of gross tonnage:

	June 30, 1925	Mar. 31, 1925
Britain and Ireland	165,467	122,128
Other countries	234,669	196,818
World total	372,267	352,143

Little change was recorded in the ranking of the various shipbuilding nations during the past quarter. France, which stood third during the first quarter of the year, changed places with Italy, which had ranked fourth. The United States moved into sixth place. The comparative standings in tonnage for the quarter, are as indicated in the following table:

	June 30, 1925	Mar. 31, 1925
Britain and Ireland	1,093,587	1,165,468
Germany	407,366	420,860
Italy	212,798	164,023
France	169,485	187,437
Holland	100,682	119,908
United States	92,001	81,728
Denmark	78,061	83,794
Japan	59,740	41,755
Other countries	156,131	131,937
World total	2,369,831	2,396,910

The gain made by the United States brings American shipyards only 8000 gross tons behind the Dutch, who in the first quarter of this year had a lead over the United States of 38,000 tons. The proportionate division of shipbuilding now, as compared with a year ago, are as follows: Great Britain and Ireland: A decline from 58 per cent to 46 per cent; Germany, a gain from 12 to 17 per cent; the United States, unchanged at about 4 per cent; other countries combined, an advance from 26 to 33 per cent. The volume of motorships on order now is 319,000 gross tons greater than at June 30, 1924; and tanker construction shows a gain of 192,000 tons, being more than double the total for a year ago.

The Dollar Steamship Line has announced two extra sailings from the port of Boston. The DIANA DOLLAR began the new schedule.

Composite Construction Is Improved

AT FIRST thought to consider using wood in the hull construction of a fair sized power propelled vessel in this day of steel might readily be dismissed as a step backward. Under certain conditions however, where the finest kind of lumber is cheap and plentiful and where steel is dear, and using a particularly well designed method of construction, wooden planking on steel framing may present definite worth while advantages which are worthy of serious consideration.

On this account it is interesting to look into a new type of composite construction recently developed and patented by L. F. Hagen, 1525 Myrtle street, Oakland, Calif.

The accompanying illustration shows a cross sectional view of a vessel of the following dimensions: length between perpendiculars, 260 feet; beam molded, 41 feet; tumble home 4½ inches; and molded depth; 20 feet 6 inches. The entire framing structure is shaped and erected in much the same manner as when the vessel is to be built entirely of steel. The sizes and shapes of the different members are determined by the owners, classification societies and engineers in charge of construction.

Frame floors, deck beams, bar keel, garboards, tie plates, sheer strakes, stringer plates, hatch coamings and brackets all of steel are erected and fastened together rigidly, and in a substantial manner, making the framing structure entirely self-supporting and strong enough to absorb all shocks and strain when the vessel is working in heavy weather. The side framing is further reinforced or stiffened with diagonal braces extended from upper part of bilge to sheer strakes to which the planking is securely fastened.

After all frame floors, deck beams, stanchions and other parts connected with the framing structure are in place, the sides and bottom of the vessel are planked with wood instead of the usual steel plating. This is done for the purpose of making a stronger vessel both locally and in the structure as a whole. It is also claimed that the vessel will be lighter and that she will be stronger and more desirable in other respects, especially for the coastwise trade up to certain size. It will be noted on the plan that no particular kind of planking is specified. The design merely calls for wooden planking, and any kind of wood can be used. The

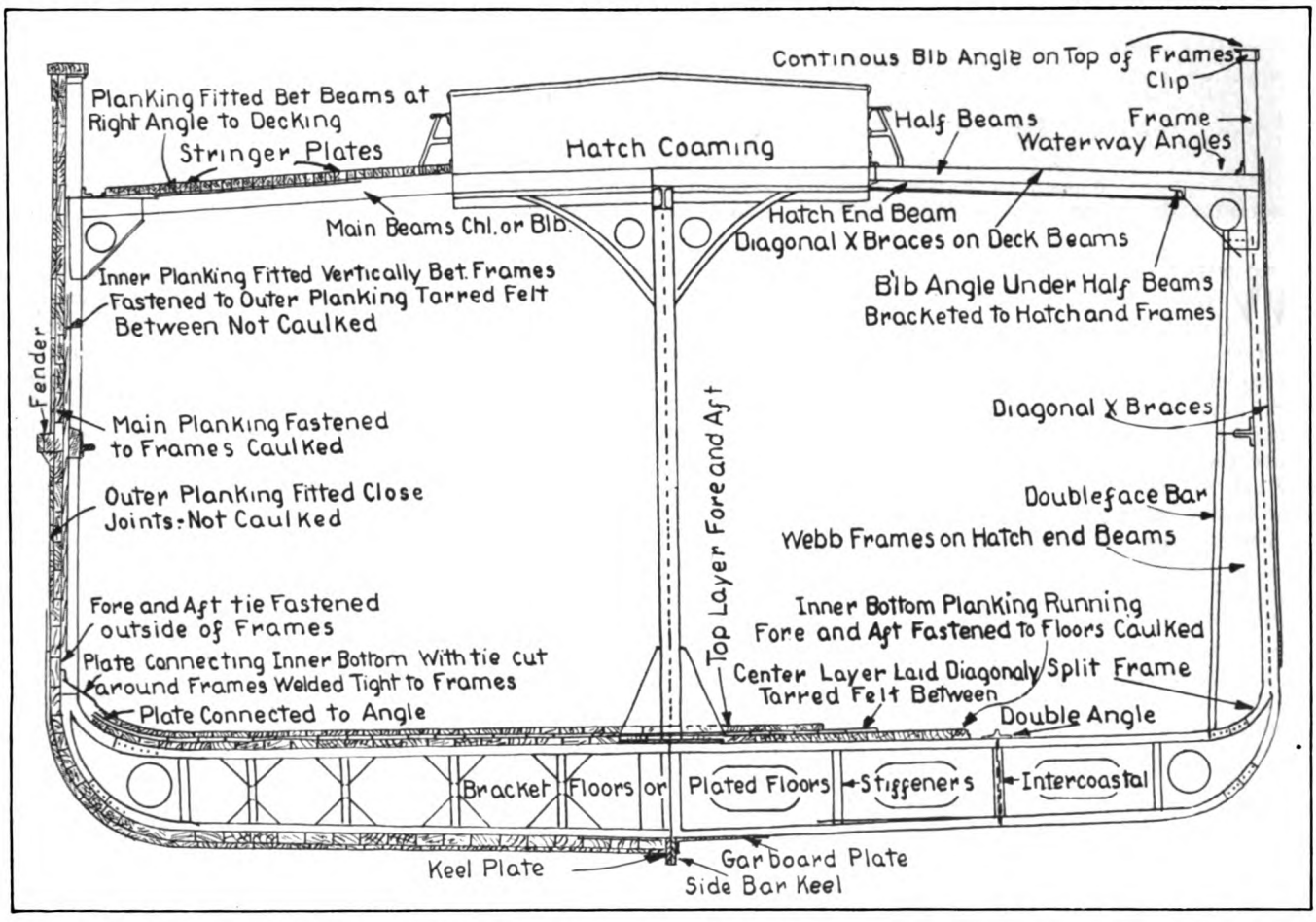
planking for the bottom on the particular vessel illustrated here consists of a first layer or main planking in strakes 4 inches by 12 inches of rock elm, bolted and clinch-bolted to the frame flanges, caulked and made watertight in the usual manner. The outer planking which is half or less of the thickness of the main planking is then put on in strakes fore and aft, similar to the main planking, except that it is fitted in close joints, and is not caulked. The rock elm planking is used for the bottom and bilge planking only. From the upper part of the bilge to the top sides, Port Oxford cedar may be used for the main planking and after it is caulked and made watertight the outer planking is fitted on in close joints. This outer planking does not have to be of great thickness, and teakwood should be used.

The inner bottom or tank top is built of three layers of planking. The first is laid fore and aft in strakes 3 inches in thickness, bolted and clinched to the floors, caulked and made watertight. A second layer, 1¼ inch thick is then laid diagonally across the first layer with tarred felt between. Then a layer 1¾ inches thick is laid fore and aft in strakes, not necessarily caulked. The center or second layer may be of Port Oxford cedar. For the top or third layer a vertical grained Oregon pine may be used.

After the main side planking is fitted on and securely fastened an inner planking is fitted vertically between frames, from the fore and aft plate connecting the inner bottom with the shell up to the sheer plate. It is fitted tightly between the frames and is securely fastened to the main planking. Tarred felt is placed between to prevent sweatting in the hold. This inner planking must be hardwood, preferably teak, and it serves many useful purposes, in that it ties the main planking in place, secures watertightness, gives additional local strength to the side of the vessel and greater structural strength throughout and most of all it is claimed it relieves almost entirely any strain on the fastenings when the vessel is working in heavy sea. The inner planking does not take up any bulk cargo space as it does not project beyond the frames, nor does it add appreciable weight, as it does not have to be of any great thickness, 1½ to 2 inches being the limit.

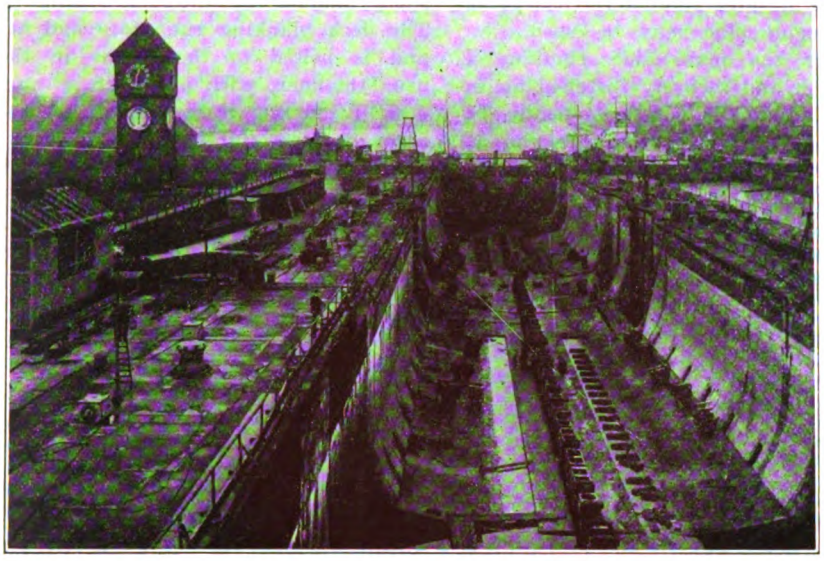
The decks are constructed in the same manner as the side planking. The deck planking runs fore and aft and is bolted to the beams in the usual manner, with an inner or subdeck fitted at right angles to the main decking tightly between beams and directly to under side of deck with tarred felt laid between. This results in a stronger deck locally and gives additional strength to the structure as a whole, with very little extra weight and does not occupy any space ordinarily used for cargo.

It is claimed that for the vessel described greater carrying capacity is obtained by about 8 per cent, than for an equal sized all steel vessel owing to lesser weight. With bottom and sides a smooth continuous surface, with no projecting edges or rivet heads to rust and corrode, and using planking which does not affect fastenings and other metal with which it comes in contact, this type of construction is said to be superior to the all steel in that speed is increased, and maintenance costs are reduced.



MIDSHIP SECTION SHOWING COMPOSITE CONSTRUCTION—STEEL FRAMING AND WOODEN PLANKING—FOR A FREIGHT SHIP 260 FEET LONG, 41 FEET BEAM AND 20 FEET 6 INCHES DEEP—PATENTED BY L. F. HAGEN

Canal Lock Serves as Drydock



German Shipyard Makes Good Loss of Floating Dock Under Peace Terms—Converts a Canal Lock Into a Drydock—This Illustration Shows One of the Locks of the North Sea Baltic Canal at Kiel After Its Conversion —A Parallel Lock Continues to Serve Ships Passing Through the Canal

BY DR. ALFRED GRADENWITZ

WHEN the Germania Shipyards, Kiel, Germany, owned by the Krupp company under the terms of the peace treaty, had to surrender a new 5000-ton floating dock purchased after the firm's conversion to peace time production. They made the best of such facilities as the old Holtenau locks of the North-Sea Baltic canal afforded and, at a moment's notice, converted one of them into an up-to-date dry dock for vessels over 4500 tons.

The original locks installation comprised two sluice chambers separated by an intermediate wall, thus allowing ships in both directions to pass simultaneously through the canal. Each of these chambers is 656 feet long and 82 feet wide. The intermediate wall is of sufficient strength for either of the sluices to be kept working, while the other is drained for inspection or repair. Moreover, the bottom of the dock had when built received such a shape as to resist while empty the enormous pressure from underneath.

Locking the sluice chambers is, under normal conditions, effected by hydraulically operated hinged gates, which, however, in the event of the sluices being pumped empty, on account of the considerable level difference (32 feet 10 inches) between the bottom of the chambers and normal water level, and the considerable width of the chambers (82 feet) would be unable to withstand the enormous pressure, and therefore, could not possibly be used as locks. This is why two locking pontoons, such as are ordinarily used in connection with the operation of dry docks and closed slips, were already provided in designing the canal. The pontoons is lowered by the admission of water ballast, and, as the dock chamber is pumped empty, the outside pressure, firmly presses the pontoon against a butt in the dock masonry. A felt and sailcloth cushion, about 2¾ inches thick and about 6 inches wide, is used exclusively for making the lock watertight.

The sluice or dock is drained by the pumps provided in both floating gates. This arrangement was found particularly suitable, there being no difficulty in installing the pumps in the pontoon at a sufficient depth for their suction height to be kept within admissible limits, even towards the end of pumping operations, while the discharge pipes of the pumps could be placed below the outside water level. This is how the lifting height of the pumps was made at any moment to correspond to the difference between the actual outside water level and the water level actually reached in the sluice chamber, thus always reducing the pumping energy to a minimum.

Inasmuch as the total amount of water to be discharged is about 1,870,000 cubic feet, while the emptying of the sluice chamber should take a minimum of time, the capacity of the pumps has been so calculated as to empty the sluice chamber, when pumping from both pontoons, in about 12 hours.

Though everything has thus been provided for using the sluices as dry docks, they had as matter of fact during about 25 years' permanent service never been drained for any purpose. This was done for the first time when in the summer of 1921, on a suggestion by the Germania Shipyards, the possibility of permanently using the sluices dry docks for the shipyard's special purposes, was put to a definite test. The favorable results obtained in this connection induced the shipyard, in the autumn of the same year, to conclude a preliminary agreement with the canal management which, after being renewed in 1923, secured to the Germania Shipyards the old southern sluice of the North Sea-Baltic canal as a dry dock for a preliminary duration of 15 years.

After draining the sluice, a layer of mud, more than 3 feet deep was found to have accumulated there, and had to be removed with a considerable expenditure of energy in order to provide working facilities at the bottom of the sluice chamber. Keel blocks, 6½ feet in height, were fitted along the central axis, and in a similar manner, on the right and left respectively, bilge blocks were installed to support vessels to be docked. The concave shape of the bottom caused any accumulating water to collect in a wide furrow, thus interfering in the absence of any special understructures with operations immediately below the bottom of the ship. Inasmuch, however, as docking operations are necessarily performed at that place, with a view to providing a dry spot for the workmen to stand upon, the cavities in the bottom of the dock corresponding to the central gates (which eventually were removed entirely) were filled in with concrete, while a strip of the same material, 6 feet 6 inches wide and 12 inches high, was provided to the right

and left respectively, thus enabling operations to be carried out even at the lowermost points of the bottom as can be seen by referring to the accompanying illustration.

The intermediate space between these concrete strips serves as a draining channel, any accumulated water being through that space and by means of siphon conduits conveyed toward the lowermost point of the dock, in order thence to be discharged by an electrically driven centrifugal pump. This arrangement enabled the dock to be kept perfectly dry while work on the docked vessel was being carried out.

Provision had to be made, however, for some additional machinery destined to facilitate operations, namely an electrically operated compressed air plant generating the driving energy for about 60 drilling, riveting caulking and other tools. The compressed air used in this connection is carried along the whole dock in pipes tapped at intervals as necessary. A converter station supplies current for lighting as well as for welding and for operating electrical tools. A rotary crane of 5 tons capacity and 46 feet radius has been installed at the seaward end of the dock for unloading any materials from lighters coming from the shipyard as well as for transferring any heavy finished parts to the shore. A smithy, a locksmith's shop and other workshops have likewise been provided as well as indispensable stores and workmen's accommodations.

Vessels of 8350 and 12,000 tons in capacity respectively have been docked in this new dry dock of the Germania Shipyards from which its dimensions may be adequately gaged. Though 492 feet in length the 12,000 tons steamer still left a clear dock length of 197 feet. The situation of the dock on the great international waterway is exceptionally advantageous to ships needing repairs.

Take Steps to Stop Lake Diversion

BY BRIG. GEN. W. H. BIXBY, Retired
Former Chief of Engineers, U. S. A.

IN THE additional permit granted recently to the city of Chicago sanitary district by the secretary of war, allowing a water flow out of Lake Michigan into the Illinois river of practically 10,000 cubic feet per second for five years, the conditions require satisfactory proof at the end of each year that the city is making proper progress in building modern sewage disposal equipment, and all existing permits may be revoked immediately upon default at any time of such progress. The war department permit as issued merely waived the interests of navigation on the part of the government. The permit gave no property rights in water or waterfronts to the sanitary district and granted no authority to the district or the city of Chicago to injure similar properies of states adjoining Lake Michigan and the St. Lawrence waterway basin or commercial and lake shipping in general.

Diversion Must Not Be Continued

The permit was issued merely because extensive works for sanitation purposes for Chicago were required, and because they cannot be completed within a few months, or even within a few years. The recent Supreme Court decision makes clearly evident that the diversion of water by the Chicago sanitary district does seriously lower the level of the Great Lakes and injures the interests of the waterfront, docks, wharves and other property fronting the lake in all the adjoining states; and that such diversion has seriously affected navigation as well, and all commerce in general dependent upon Great Lakes shipping.

The terms of the permit indicate that such diversion cannot possibly be continued indefinitely without the consent of all the parties injured. This situation leaves the matter of riparian rights still unsettled and consequently the states bordering on Lake Michigan and the other lakes and the St. Lawrence, as well as all lake shipping interests, feel obliged to continue their protest against the taking of water out of the Great Lakes system by transferring it permanently into another waterways system, such as the Mississippi. This protest is based upon the old common law and is fundamental. The state of Wisconsin has already started action in the district courts to determine the extent of its riparian rights and such suit against the state of Illinois will be carried to the Supreme Court for final settlement, if necessary.

A meeting of the northern states and lake shipping interests was held in April, and a second meeting was held in May to decide upon further action. At the latter meeting nearly all of the states in the Great Lakes region were represented by their attorneys general or others from the state legal departments, and many of the large cities along the lakes were represented by city officials or chambers of commerce or similar civic bodies. It was decided that the Great Lakes Harbor association would look after matters of publicity of facts, and that the state of Wisconsin would press its suit against Illinois in the Supreme Court, assisted by the legal departments of other states.

All of the different organizations and committees concerned will work independently of each other in addition to their mutual co-operation. It will be their supreme aim to obtain finally the protection of existing and former lake levels and of the common interests dependent upon these lake levels.

Pollution Endangers Health

It is understood that the sanitary district in endeavoring to obtain from the Illinois legislature financial means to prosecute the work in compliance with the requirements of the secretary of war for modernized sewage construction, but the governor and the state legislature have not yet been able to agree. It is understood also that the war department insists upon prompt progress in building this modern sewage equipment, in default of which all the existing permits may be revoked.

The rights of property owners in the territory of a waterway system to protect themselves against transferring of water from that system to another system have been fundamental in the development of the whole country. Shortly after the sanitary district started its present method of handling the sewage of the city of Chicago, in 1887, the city of St. Louis brought suit against the state of Illinois on the grounds that the pollution in the Mississippi was a menace to the health of St. Louis.

The courts then held that evidence was not sufficient to show that St. Louis was affected seriously up to that time, so that Missouri at that ime had no good claim agains Illinois. However, it appeared possible that pollution might reach St. Louis because of the Chicago sewage at some later date. Today the situation has changed decidedly. Members of congress testi-

fied last winter before the house rivers and harbors committee and the senate special committee that the pollution has become so serious and that it has moved down the river so rapidly that it has already reached Peoria and other Illinois cities, and within a few years will extend into the Mississippi river through the mouth of the Illinois river. Merely as a question of health, the time has come to give up antiquated methods and to adopt modern filtration and chemical treatment, such as was applied by Massachusetts and New Jersey as early as 1887, and has been practiced in the large cities of Europe, such as Manchester, London, Paris and Berlin for scores of years.

Uses Double The Amount Granted

The secretary of war in 1899 was asked by the city of Chicago for permission to divert 10,000 feet per second from the Chicago river into the Illinois river in order to prevent the flowing of sewage into Lake Michigan. Only about half the amount was granted (4167 feet per second) in a revokable permit, subject to the action of congress and the future developments of the sanitary district and the lake levels.

Chicago, however, continued to take this water without getting further authority and gradually increased its limit up to nearly 10,000 feet, claiming the right to do this by its own state laws. The sanitary district was enjoined by the federal courts, however, and this action led to a suit by the United States against the city, which finally reached the Supreme Court last February. The Supreme Court's decision was in effect that the sanitary district must limit itself to amounts specified by the secretary of war, which up to that date were 4167 feet. The Supreme Court, however, held that this decision need not interfere with any future permits that the secretary of war might give under conditions of existing law.

After public hearings the secretary of war issued the new permit, which practically amounts to a statement that the war department temporarily waives the interest of public navigation, only long enough to allow the city of Chicago to build modern sewage treatment plants, the permit being revokable whenever Chicago fails to show proper progress. Chicago now knows what must be done and the penalty for failure to act, and there will be no let up in vigilence on the part of the millions of people adversely affected by the present situation to see that the city of Chicago promptly and faithfully carries out her contract so that justice to all concerned will prevail.

Recent Sales of Ships

President Palmer of the Fleet corporation announced the following sales:

AVONDALE, steel cylindrical tanker, 8974 deadweight tons, 5731 gross tons, for $47,590 to M. & J. Tracy, Inc., New York.

LAKE OGDEN, lake type steel freighter, 2875 deadweight tons, 2013 gross tons, for $26,505 to the Atlantic & Caribbean Steam Navigation Co., New York.

LAKE FLUVANNA, lake type steel freighter, 3525 deadweight tons, 2349 gross tons, for $25,000.

LAKE GALERA, lake type steel freighter, 3525 deadweight tons, 2316 gross tons, for $25,000.

Both of the above lakers were sold to the Baltimore & Carolina Steamship Co., Baltimore, with the understanding that betterments and alterations are to be undertaken.

LAKE FAULK, lake type steel freighter, 4155 deadweight tons, 2598 gross tons, for $40,000 to the Cadwalder-Gibson Lumber Co., Manila, P. I.

HUKEY, steel ocean-going coal burning tug, 429 gross tons, for $45,000 to the Atchison, Topeka & Santa Fe railway, Chicago.

The president of the Fleet corporation announced that with the delivery of the PRESIDENT WILSON on July 7, the sale of the five vessels on the California-Orient Line was completed and this line has been continued in operation by the new owner Dollar Steamship Line on the same schedule of service and without interruption of service as was provided for under operation by the Fleet corporation. The vessels included in the sale are the PRESIDENT CLEVELAND, 14123 gross tons; PRESIDENT LINCOLN, 14187 gross tons; PRESIDENT PIERCE, 14123 gross tons; PRESIDENT TAFT, 14123 gross tons; PRESIDENT WILSON, 14127 gross tons.

Notice is given of the discontinuance of the course in marine engineering at Lehigh university. The enrollment has fallen off to such an extent as to indicate insufficient demand.

From the Editor's Mail

In volume 54 of your Nov. 1924 issue, on page 422, is an article, "Earth Inductor Compass Found Useful at Sea."

The invention described there was invented by me 24 years ago in Germany. It is described in detail in the *Elektrotechnischen Zeitschrift* of 1901, pages 403-405. See especially page 404, column two.

DR. C. L. WEBER,
17 Fontane street, Berlin, Germany.

The article in MARINE REVIEW for Nov. 1924, to which Doctor Weber refers credited Dr. L. J. Briggs and Dr. Paul R. Heyl of the bureau of standards with the invention of this compass, and stated that for its invention these two gentlemen had been awarded the Magellan gold medal. On the receipt of Doctor Weber's letter his claims were communicated to Doctors Briggs and Heyl, and the following reply was received from Doctor Heyl:

Doctor Weber is not the only person who has invented an earth inductor compass. Several patents were taken out for such an instrument before the recent war. The verdict of time and the searching test of war have declared none of these earlier inventions practicable.

Our invention was designed primarily for airplane use. The Great war closed without a satisfactory airplane compass on either side of the conflict. We made no claims for originality for the earth inductor used as a compass. That is older even than Doctor Weber's invention. Our invention contained certain novel features which, for the first time, made such an instrument practicable in aircraft.

PAUL R. HEYL,
Bureau of Standards, Washington, D. C.

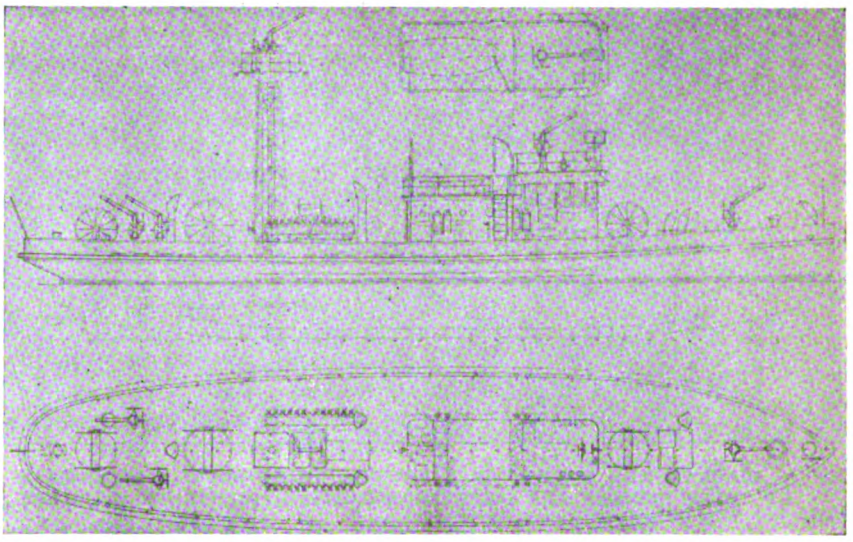
As bearing further on the time required for transportation by water on the Ohio and Mississippi rivers, let me call your attention to the twenty-fifth tow of the Jones & Laughlin Steel Corp., composed of the towboat ALIQUIPPA and nine barges, which left Pittsburgh on March 4 and arrived in Memphis in seven days and six hours, and also to the arrival in New Orleans on April 3 of the A. O. ACKARD, belonging to the Carnegie Steel Co. with 11 barges loaded with 800 tons each, after a run of 12 days and eight hours for the 1940 miles from Pittsburgh to that city.

S. A. THOMPSON, *Secretary*,
National Rivers and Harbors Congress, Washington.

The employes of Charles L. Rohde & Sons Co., ship builders, Baltimore, Md., have been offered group insurance by their employer.

Builds High Powered Fire Boat

Triple Screw Steel Fire Boat for the City of Los Angeles—Seven Gas Engines of 300 Horsepower Each—Six Engines Direct Connected to Four Stage Centrifugal Pumps — Total Delivery 10,200 Gallons Per Minute



Outboard profile and main deck plan of the new fire boat building for the city of Los Angeles

BY L. E. CAVERLY

A CONTRACT for a triple screw steel fire boat for the city of Los Angeles has been awarded to the Los Angeles Shipbuilding and Drydock Corp. and this vessel is now under construction at their yard in Los Angeles harbor, San Pedro, Calif.

The vessel was designed by the writer, who was appointed consulting naval architect for the city of Los Angeles, in collaboration with Ralph J. Scott, chief engineer of the fire department of the city of Los Angeles, and the design includes many novel features in fire boat construction.

In order to keep the vessels dimensions as small as possible for rapid maneuvering in restricted spaces and to obtain the maximum water delivery and speed with a minimum of stand by expense, all the power required for propulsion and pumping is developed by gas engines direct connected to propellers and centrifugal pumps.

The hull is of steel throughout, with the exception of the fenders which are of wood, and special precautions have been taken to limit the fire hazard to the vessel itself. The principal dimensions are: length overall, 99 feet; length between perpendiculars, 93 feet 4 inches; beam molded, 19 feet; beam over guards, 20 feet 4⅜ inches; depth molded, 9 feet 7 inches; and draft mean, 6 feet 6 inches.

Three transverse water tight bulkheads subdivide the hull forming a fore peak, forward hold, machinery compartment, and after peak. All the bulkheads extend to the main deck which is of steel for the full length of the vessel. The deck house contains a raised pilot house, a nozzle and equipment room, a galley and a toilet. A raised dome is provided over the after end of the machinery compartment and a companion way is located forward for access to the fore hold and to the forward end of the machinery space.

Fire Fighting Equipment Complete

The fire fighting equipment consists of five monitors, one located on the main deck forward, one on top of the pilot house, two on the main deck aft and one on top of an electrically operated telescopic water tower having a maximum elevation of 44 feet above the water line. Each monitor is capable of delivering 3000 gallows of water per minute. There are two hose manifolds on the main deck, one on each side of the dome over the machinery compartment, each having 12 connections for 3½ inches fire hose. There is also a Foamite set of 300 gallons capacity, located on top of the dome over the machinery space.

Fire hose is carried on four reels. The one in the fore hold has a capacity of 1500 feet of 3½ inches hose, the two swiveling reels on the main deck each hold 1000 feet of 3 inches hose, and one swiveling reel on the main deck holds 1000 feet of 3½ inches hose. Stowage is provided in the deck house for an assortment of nozzles, an oxy-acetylene burning outfit, diving apparatus, smoke helmets, and miscellaneous fire fighting equipment.

Both electric and hand steering gear are provided and the vessel is electric lighted throughout. A hand operated capstan is provided on the main deck forward for handling lines and anchor cable.

Fuel is carried in separate steel tanks located in the fore hold and after peak compartments. A water screen of perforated pipe is carried around the top of the deck house and under the upper fender to protect the vessel when operating close to a fire.

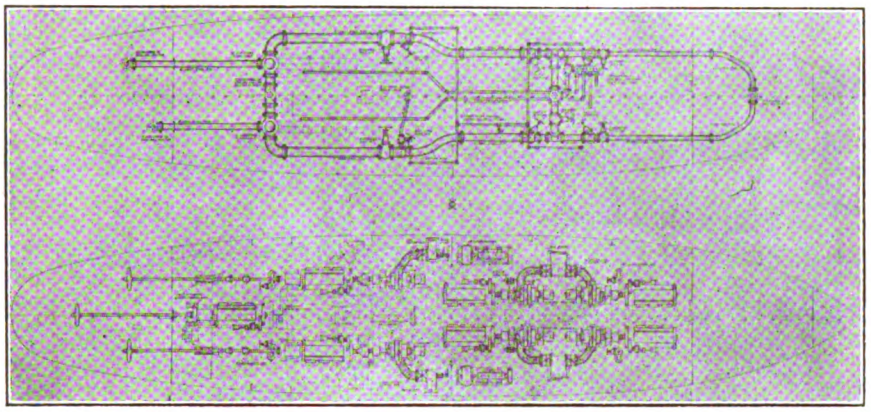
The power plant consists of 7 Winton gas engines each of 300 brake horsepower built by the Winton Engine Co., Cleveland. Two Winton engines each of 25 brake horsepower are also used for generating electrical current. One of the 300 brake horsepower engines is located on the center line aft and drives the center propeller. Two of the 300 brake horsepower engines are located aft to drive the wing propellers and after fire pumps, cut-out couplings being provided so that these engines can be used for driving the propellers when proceeding to or from a fire, and for driving the after fire pumps at the scene of the fire. Four of the 300 brake horsepower engines are direct connected to the forward fire pumps.

Convenient Arrangement of Machinery

This arrangement provides a total of 900 brake horsepower for propulsion when proceeding to or from a fire giving the vessel a speed of 17 miles

The author is vice president and general manager of the Los Angeles Shipbuilding & Drydock Corp., Los Angeles.

per hour, and the center engine of 300 brake horsepower is available for maneuvering at the fire when the remaining engines are on pumping service. The two 25 brake horsepower Winton engines are direct connected to two 15 kilowatt generators, one of which provides all the electric power required for the steering gear and other auxiliaries, the other being in reserve.



PIPING DIAGRAM AND MACHINERY LAYOUT—SHOWING SEVEN GAS ENGINES—SIX OF THESE ENGINES ARE DIRECT CONNECTED TO CENTRIFUGAL PUMPS

The pumping plant consists of six Byron Jackson four stage centrifugal pumps made entirely of bronze, each having a capacity of 1700 gallons per minute at 200 pounds discharge pressure, giving a total delivery of 10,200 gallons per minute. Each pump draws from a separate sea suction and discharges through a check valve into a discharge header circuit which supplies the monitors and manifolds on deck.

Hydraulically operated valves are provided in the discharge line from each pump and at the base of each deck monitor. There is also a motor driven bilge pump and air compressor, the latter being used for operating an air whistle, since there is no steam.

Special provision has been made for the ventilation of the machinery compartment and the prevention of the accumulation of gas vapors in this space. Fuel is carried in well ventilated spaces forward and aft of the machinery compartment and fresh air is admitted into the engine room through ventilator cowls and louvers under the pilot house floor.

There are two motor driven exhaust blowers located under the main deck abreast of the engine hatch. These blowers draw through steel ducts from the vicinity of each gas engine and the switchboard, and discharge through ventilators above deck. The blowers have sufficient capacity to change all the air in the machinery space every five minutes.

As a further precaution, a drip pan is provided under each engine to collect any gasoline or lubricating oil, with drains to a well ventilated closed tank under the engine room floor. This tank is connected to the bilge pump and the contents may be pumped overboard as found necessary.

The contract price was $214,000 and provides for completion within 150 days. It is expected that the vessel will be ready about Oct. 1, 1925.

Propulsion by Induced Stream Lines

BY C. M. PAXTON, Inventor

THIS system of ship propulsion secures an increase in efficiency over ordinary methods by decreasing the wave making resistance.

When a vessel is driven by a screw propeller there is, at a given speed, an increase in the stern depression, due to the action of the screw itself, and no decrease in the bow wave. The fundamental idea underlying induced stream line propulsion however, is that the propulsive force, instead of being applied at the stern of the vessel, by a screw or other means, may be applied in such places and in such ways as to minimize the disturbance produced by the vessel in moving through the water and thus to decrease the principal cause of low propulsive efficiency.

Since the bow wave is produced at the entrance section, there should be present at that point a propelling device tending to neutralize this effect by excavating water from this region and at the same time producing a reasonably efficient forward thrust. Near the stern of the vessel, at which normally there is a depression, the effect desired is to build up the water level by an inward flow, with a further propulsive effect in the forward direction if possible. If these ends can be attained it may even be advantageous to use a propelling method intrinsically less efficient than a screw, the net efficiency being raised because of the decreased resistance to motion, particularly at high speeds.

Experiments Should Be Continued

On June 19 C. M. Paxton, the inventor of induced stream line propulsion and the author of this article delivered an address on this system before the technical committee of the American Steamship Owners association in New York. Great interest was shown and a free discussion followed the talk.

Further experiments, particularly on larger size craft and practical demonstrations before naval architects and marine engineers, are necessary to establish the practicability of the application of this type of propulsion to commercial vessels.

The new method of propulsion makes use of the injector action of high speed water jets so placed on the hull that this result is secured. Since the transporting action depends upon the lateral surface of the jets they are ejected through narrow slits.

These sheet jets, in addition to furnishing the propulsive force, operate to reduce resistance in the following manner. The water in the thin, approximately vertical sheet is moving at high speed at a slight angle to the surface of the vessel. This high speed jet as it moves through the water induces a flow of adjacent water toward it, and nearly at right angles to it. It is capable of moving a large mass of water in this manner at a lower speed. There is thus a tendency to create a depression at the bow in the place where the bow wave occurs in towing or in stern driving. When the jets are designed properly their effect at high speeds is

to neutralize the bow wave, leaving the surface of the water practically undisturbed. As the sheet jet moves rearward, picking up more water and slowing down, the resultant effect of the jet plus the induced water flow is to deposit water in the place where there is otherwise a depression.

Description Of Model Used

About three years ago a model was built to test the ideas presented above. This model in its present form is 34.5 feet long; has a mean draft of 1.5 feet, beam 3.5 feet and a displacement, as equipped and manned, of 3.1 tons. The model was originally intended to be a ninth scale model of a class 186 destroyer but is not exactly so because of increased draft. The nozzles are two in number, each 9/64 inch wide and 5 inches long and are set so as to direct the jets, when the model is stationary, at 22 degrees on either side of the center line and at about 12 degrees from the hull surface. The model is equipped with a six cylinder gasoline engine and a pump for supplying the jets.

Typical Results And Calculations

The operation of the model, using jets for propulsion, has resulted in empirical formulas for the behavior of submerged jets. These formulas are new and may require slight corrections when more data are available. The other calculations upon which our conclusions are based follow from the well-known principles of dynamical similarity for passage from model performance to ship performance and the well-known and simple laws of jet reaction.

The primary advantage is, of course, more economical propulsion, particularly at the higher speeds, and the removal of the speed limiting factor; that is, increasing the practicable speed limit for marine vessels. Screw propeller and shaft troubles are, of course, eliminated. When the jets—that is, the nozzles—come partly out of the water, as a screw does, and for the same reason, there is no variation of load on the prime mover and no tendency to racing; neither is the propulsive effect appreciably reduced. Reactive thrust is constant.

Advantages And Limitations

A ship, equipped with induced stream line propulsion, has superior manoeuvering ability. This has been demonstrated with the model used in development. This makes possible broadside movement, as toward or away from a dock, which may be employed in a large ship to cancel set and drift. Stopping and reversing the ship's motion may be accomplished in much less time and distance than with a screw and in perfect safety to apparatus.

As bow-wave and wash are minimized, the method is suitable for self-propelled canal barges, and the permissible speed through restricted channels may safely be made very much higher than with a screw or other heretofore available means of propulsion. The effect of restricted channels on the cost of screw propulsion is well known. Induced stream line propulsion, applied to ships suitable for Great Lakes and coastwise operation, and for operation through the New York State Barge canal has been suggested as the solution of the Barge canal problem and the grain problem of the port of New York. Regardless of low efficiency, *ordinary* jet propulsion is now being employed because of inherent advantages, for propulsion on canals abroad. For inland waterways such as the Mississippi river where the channel is constantly shifting, and where logs, snags, sand and mud-bars have to be contended with, induced stream line propulsion is ideal.

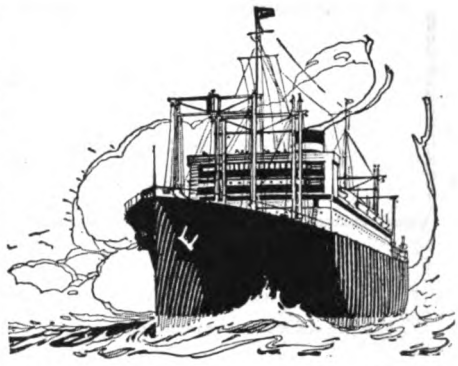
In a ship propelled by the induced stream line method there is no vibration such as is unavoidably encountered in screw propulsion. The method is likewise advantageous for harbor fire boats wherein the propulsive equipment would be available for fire fighting. The method cannot be favorably compared to screw propulsion for application to tugs or boats designed and used for towing at low speed, where thrust is paramount.

The essential apparatus consists of a suitable pump and prime mover, with distribution means, valves and nozzles. Multiple units may be installed, either in series or parallel. All apparatus is obtainable from numerous manufacturers in the open market. Prime movers may be of any type.

Centrifugal pumps (single or multistage) seem to have much the advantage over pumps of other types. They are readily obtainable in sizes suitable to propel any ship from the very largest down to the larger size motor boats, with overall efficiencies ranging from 80 to 87.5 per cent.

For suitable applications, the cost of equipment and installation will be less than for screw propulsion at the same speed but somewhat more than for screw propulsion per shaft horsepower of the prime mover.

Engine room equipment will, generally speaking, occupy no more space than is necessary for the installation of equivalent screw propulsion. The method is particularly adapted to bridge control, since remote control of valves is standard practice.



Marine Exposition in New York—Nov. 9-14

The American Marine exposition including ports and transportation, will meet in a general marine show in New York at the Two Hundred and Twelfth Anti-Aircraft Regiment armory at Sixty-second street and Columbus avenue, Nov. 9 to 14. There will be the most interesting and the widest variety of exhibits ever brought together and every one who buys from or sells to or does both or who is in any way interested in the merchant marine should make it a point to attend this show.

Steamship owners are quite likely to think of themselves solely as customers of the marine industry. However, a large percentage of these other divisions are engaged in world wide trade and make use of ships for export and import cargo and for travel. The ship owners, who by the way are selling something just as much as any one else, should take an interest in and support by their co-operation all branches of this closely interrelated business so that they may in turn receive whole hearted and loyal support. In the same way the various ports should come out of their shell and display their progress to an interested public at this exposition and that is why it has been given the new title used above.

A model shipbuilding contest has been initiated and the award will be made at the Marine show, Nov. 10. This contest is for the boy and sea scouts of America. The committee to pick out the winning model will be: Stevenson Taylor, president of the American bureau of shipping, Admiral Leigh C. Palmer, president of the Emergency Fleet Corp., and Admiral J. D. Beuret, chief of the bureau of construction and repair. The models will be displayed at the Marine show and the announcement of the winners will be made there. The boy who wins first prize will be sent to see the mayor of his city, the governor of his state and the President, and then on a student's tour of Europe.

From the Old Log Book

Stray Items About the Great Lakes, Atlantic, Pacific and Gulf Coasts and Inland Rivers from MARINE REVIEW Files of 10, 20, 30 and 40 Years Ago

August, 1885

FORTY years ago the *Marine Record* (the predecessor of MARINE REVIEW and a weekly) in an account of the building of the new paddle steamer CITY OF CLEVELAND, said that the Detroit Drydock Co. was constructing a veritable floating palace for the Detroit & Cleveland Navigation Co. to be ready by the opening of the season of 1886.

Words, we are sure, would fail the chronicler of the above could he but see the two latest floating palaces of this line, the GREATER BUFFALO and GREATER DETROIT, completed last year by the American Shipbuilding Co. at their Lorain plant. A brief comparison of principal characteristics between the old and the new is interesting.

	City of Cleveland	Greater Detroit
Year built	1885	1924
Place	Detroit D. D. Company	American S. B. Company
Material	Steel	Steel
Propulsion	Steam	Steam
Method	Feathering Paddles	Feathering Paddles
	Feet Inches	Feet Inches
Length O. A.	283 0	535 0
Length B. P.	270 0	519 0
Beam-Hull	40 0	58 0
Beam-O. A.	70 0	96 6
Depth	16 0	23 7
Type of Engine	Beam	Inclined
No. of cyls.	one	three
Expansion	Single	Compound
Cyl. dia. inches	60	66 x 96 x 96
Stroke, feet	12	9
Boilers	4	9
Type	....	Scotch
Pounds Pres.	100	167
Passenger Capacity	2500	3500
Freight in tons	600	1200

That good vessels were built 40 years ago is evident as the palatial CITY OF CLEVELAND *renamed the* CITY OF ST. IGNACE, *is still very much in active service, running daily between Cleveland and Port Stanley, Ont., for the Western Reserve Navigation Co.*

August 1895

THE Russian government 30 years ago had underway the completion of the Siberian railway from Omsk to Okotsk. Large ice breaking car ferries were needed for crossing Lake Baikal. The Detroit Dry Dock Co. having built the big car ferries for use in the Straits of Mackinac was to be commissioned to furnish the plans and to superintend the construction of similar boats for the Russian government. Frank E. Kirby and Gilbert N. McMillan were at the time in St. Petersburg in connection with these proposals.

* * *

Since that time many Russian armies have moved over this route, in the old imperial days to fight the Japanese, then later red and white contingents contended for its control, and the hereditary head of the vast Russian empire with his consort and all their children were murdered at a station along its way. A railway with a varied history!

* * *

In a letter to the editor, Aug. 1895, the question was raised as to the application of electricity as the motive power for large sea going vessels. The writer said that the scheme of generating electricity on board and then using it through motors on the propeller shaft to drive the vessel was a possible solution but he wanted to know what the advantage would be.

* * *

All of the larger ships of the navy are now electrically driven. In the July issue of MARINE REVIEW an account was given of a large ocean going tanker recently converted from steam to oil engine electric drive. A month ago there was recorded the launching of the T. W. Robinson, a lake freighter 586 feet long, equipped with a turbo electric drive.

August 1905

SAILING ships were still much in evidence 20 years ago. MARINE REVIEW of that time announced that the S. P. Marts Co., Baltimore, had awarded a contract to the New England Co., Bath, Me., for a four masted schooner 175 feet long, 35 feet beam and 13½ feet depth.

* * *

Bertelsen & Petersen were doing business as shipbuilders and repairers on Border street, East Boston, and had just been awarded a contract by the Commercial Towboat Co., Boston, for a wooden tow boat, 80 feet long, equipped with a reciprocating double expansion steam engine.

This firm flourished and grew as the years went on and received a tremendous impetus during and shortly after the Great War, finally becoming so powerful a factor in ship repairs in Boston harbor that it acquired control of the Atlantic Iron Works, one of the oldest firms in this line of work. The Atlantic Iron Works is now one of the two leading dry docking and ship repairing firms in this port, the other being the Simpson plant of the Bethlehem Shipbuilding Corp.

* * *

At exercises held at Sault Ste. Marie in commemoration of the semicentennial of the completion of the first canal, the Hon. T. E. Burton, then chairman of the committee on rivers and harbors of the house of representatives, made an impressive address upon the "Improvement of Lake Channels."

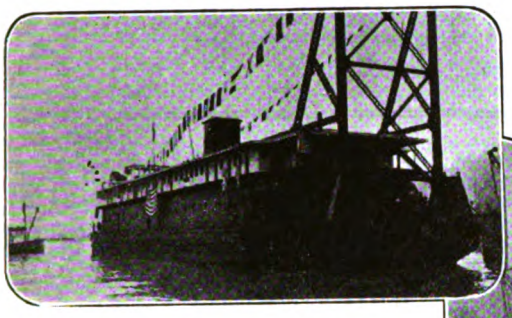
August 1915

THAT American Indians make good sailors on modern ships was the conviction expressed by W. J. McCormack, superintendent of the Northern Navigation Co.'s lake fleet, in the August 1915 issue of MARINE REVIEW. He said that they were hard working silent men who took their duties seriously, that they were courteous to passengers but made no attempt at conversation unless questioned. Almost all of the crew on deck on the Lake Superior steamers in those days were Indians from the Georgian bay district. Most of these Indian sailors were less than 21 years of age and as they made good they were advanced to more responsible positions, and one of them had been a capable captain.

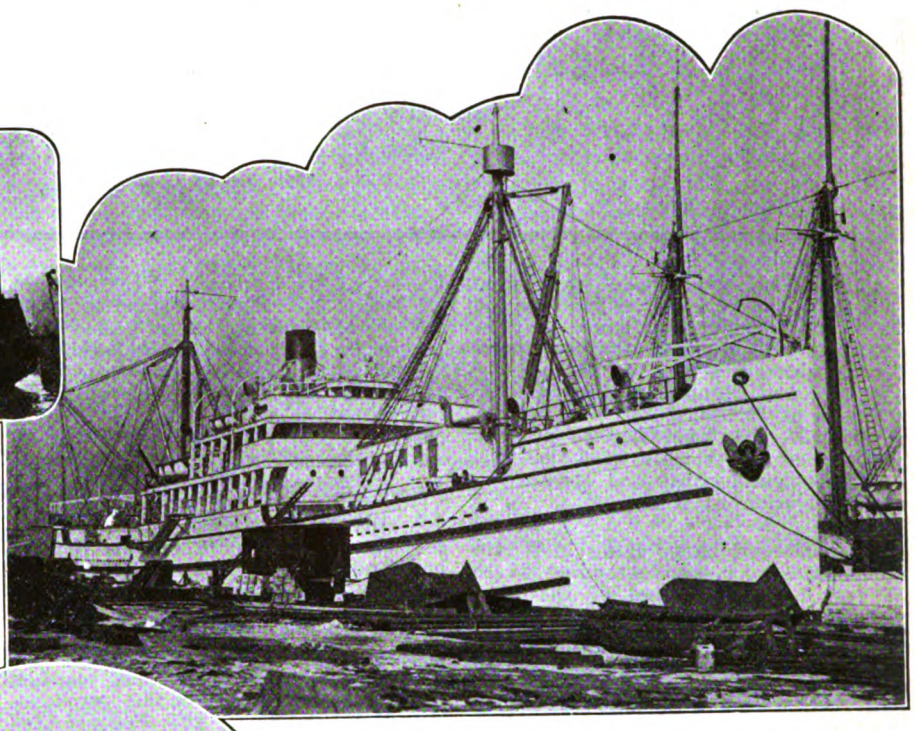
* * *

After ten months of the Great War, 511 vessels of 915,457 gross tons had been destroyed. This represented at the time 2 per cent of the world's merchant tonnage. In looking over a list of the losses of the different nations it is rather surprising to note that only 5 American vessels of a total gross tonnage of 9601 had been destroyed up to that time, which was less than one-fifth of the losses sustained by Norway in the same period. The assigned cause of destruction for all losses was either submarine, mine or cruiser in the order named.

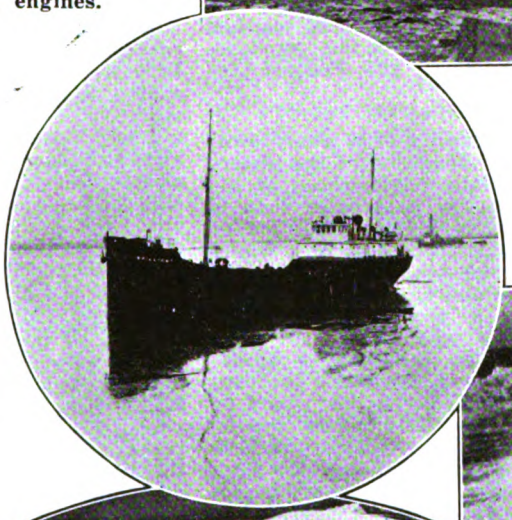
Latest Marine News in Pictures



The Clackamas, an all steel diesel electric pipe line dredge of very large power, designed and built by the Port of Portland commission in the city of Portland, Oregon. Launched Feb. 26. Current is generated by five diesel engines.

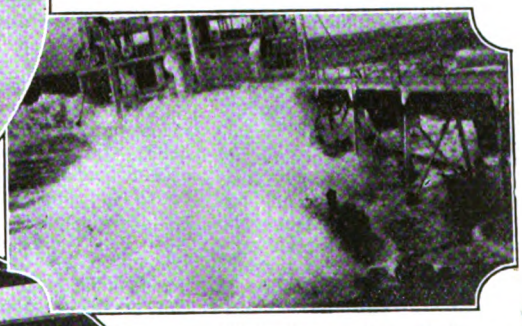


Arcturus, fitted out at the Tebo plant, Brooklyn, for an extended voyage of exploration to the Saragossa sea and the Galapagos islands. The loss of this vessel was feared early in April, owing to lack of communications, but the fears were ungrounded, word being received.

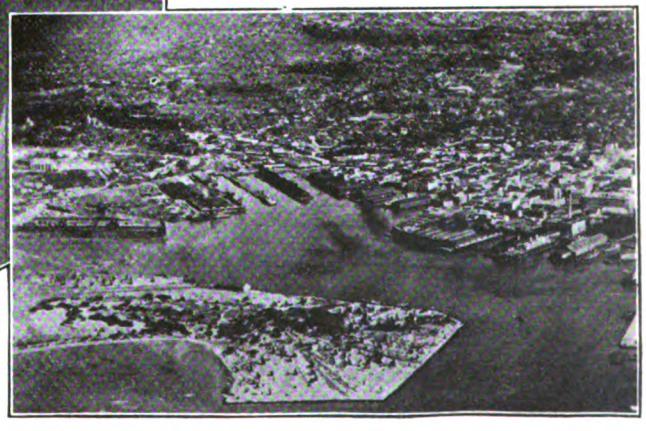


Oil engine electric tanker, Brilliant, owned by Atlantic Refining Co. Two 225 H. P. Ingersoll - Rand oil engines.

Capt. John T. Diggs, new commander of the Matson liner Matsonia in the San Francisco-Honolulu service.



Watertown, bound from Boston to San Pedro, in a storm Dec. 23, 1924. At right, in the seas, appears the face of a man, supposed to be an apparition. Patten Engineering Co.



Honolulu harbor. In the foreground, Sand Island quarantine station. The new piers are shown to the right. Matson Navigation Co. operate a fast passenger and freight service to this port.

Late Decisions in Maritime Law

Legal Tips for Shipowners and Officers

Specially Compiled for Marine Review
By Harry Bowne Skillman
Attorney at Law

A SINGLE small vessel, moored at the end of a pier, where she did not obstruct entrance to the ships, is not required to give sound signals during a fog. The duty of giving sound signals, it was said in the case of PATRICIA, 296 *Federal Reporter* 527, has been applied only in cases where the vessels were tied side by side extending into and obstructing the navigation of a stream.

* * *

A submerged barge lying in a slip alongside a pier, and extending 30 to 35 feet beyond the end of the pier, was held, in the case of WILLIAM NELSON, 296 *Federal Reporter* 553, to be not marked in compliance with Act of March 3, 1899, section 15, where it was not marked at all by buoy or beacon in the daytime, and at night only by lights placed even with the end of the pier.

* * *

A steamship owned and operated by the Turkish government, and engaged in commercial trade under charter to an individual, was not immune from seizure on process, especially where diplomatic relations between the United States and Turkey had been severed at the time of the seizure, and in the absence of any suggestion for immunity from the state department.—GUL DJEMAL, 296 *Federal Reporter* 567.

* * *

A steamer does not become an outlaw because she dragged off the anchorage grounds, nor does she become an obstruction to navigation ipso facto because she anchored again outside of anchorage grounds; she could have been compelled to move on to anchorage grounds by the federal authorities, if they thought it advisable, and would be liable for damage caused by her being an obstruction to navigation.—KATHLEEN TRACY, 296 *Federal Reporter* 711.

* * *

The owner of a tug has a maritime lien under the general maritime law on a barge for towage service rendered under a contract between the master of the tug and the master of the barge, made in a foreign port.—Hupper v. Hyde, 296 *Federal Reporter* 862.

* * *

Provision of through bill of lading, issued by a railroad company for a shipment to a European port, that the property should be subject to all conditions expressed in the regular forms of bills of lading in use by the steamship company at the time of shipment, is valid, it was declared in the case of SUSQUEHANNA, 296 *Federal Reporter* 461, and makes the conditions of the ocean bills of lading a part of the contract. Provisions in an ocean bill that the carrier shall not be liable for any claim unless written notice thereof is given before removal of the goods from the wharf, and that no suit therefor shall be maintainable unless instituted within three months after such notice, are reasonable and valid.

* * *

Where neither the party furnishing, at charterer's request, stevedoring services, nor the party furnishing labor and materials, knew any facts showing that the vessel was under charter, and the charter party required charterer to pay for such services, but neither party made any inquiry to ascertain the facts, neither party secures a lien on the vessels.—VILLE DE DJIBOUTI, 295 *Federal Reporter* 869.

* * *

"The responsibility of a wharf owner for the safe condition of the waters in the immediate neighborhood of his wharf is certainly no greater than is his responsibility for the condition of the wharf itself. The duty of a wharf owner as to his wharf is to exercise ordinary care and no more. The same rule has been applied to the approaches to a wharf, pier or dock. * * * It is quite true that a wharfinger may be responsible for the consequences of a defect in his wharf or other danger which imperils vessels, either there obtaining a berth or about so to do, and that such liability does not necessarily depend upon his actual knowledge of the danger. But the measure of his responsibility is negligence, that is, lack of care under the circumstances; and it is on this principle that he is held liable for what he ought to have done, that is, in not knowing it must be found as a fact to result in negligence."—Berwind White Coal Mining Co. v. Bush Terminal Co., 296 *Federal Reporter* 475.

* * *

"Wharfage," it was held in the case of Beard v. Marine Lighterage Corp., 296 *Federal Reporter* 146, not only includes mooring of vessels for unloading and loading cargo, but also for the purposes of protection and safety, and a maritime lien attaches to the ship in a home port if she is not out of commission or withdrawn from navigation. The right to collect wharfage, it was said, is a right which has been recognized in admiralty from the earliest times, and it has been repeatedly held that the wharfinger has a maritime lien therefor, and no distinction has been made whether the wharf be privately or publicly owned. A steamship company which as carrier performed its whole duty to the shipper, under the bill of lading, by delivering the goods on a pier or to a lighter, was under no obligation to furnish free wharfage to the consignee for lightering the goods from the pier or vessel.

* * *

It was held in the case of O. Y. Tonnage, A. B., v. Texas Co., 296 *Federal Reporter* 893, that the burden is on the owner to prove the seaworthiness of the vessel, and also that the damage to the cargo was occasioned by the perils of the sea for which the owner is not responsible; mere proof of damage by sea water is not sufficient.

* * *

A ship owner, it was declared in the case of United States v. Sugerland Industries, 296 *Federal Reporter* 913, cannot recover demurrage at the rate stipulated in the charter party for delay in discharging, because the consignee did not receive and remove the cargo from the wharf as fast as the ship could, and was required to discharge it, where it might have discharged at the agreed rate, and stored the goods at expense of consignee at a substantial saving of expense.

* * *

A set-off is unknown to the maritime law, said the court in the case of Rodgers Sand Co., v. Monongahela & Ohio Dredging Co., 296 *Federal Reporter* 919, except as a credit on the transaction which forms the object of the libel, and a claim arising out of another contract or transaction cannot be set up as a defense.

* * *

"While in mercantile contracts time is of the essence, the statement that the vessel would load 'about June 2, and 'about June 5' is a mere representation, and not a warranty, and while 'about' is a comprehensive term, and when used with regard to time may cover a considerable extent, and has no definite trade meaning, it does not signify that time is immaterial, but only that the precise date is not warranted."—Williams Steamship Co. v. McLeod Lumber Co., 296 *Federal Reporter* 927.

* * *

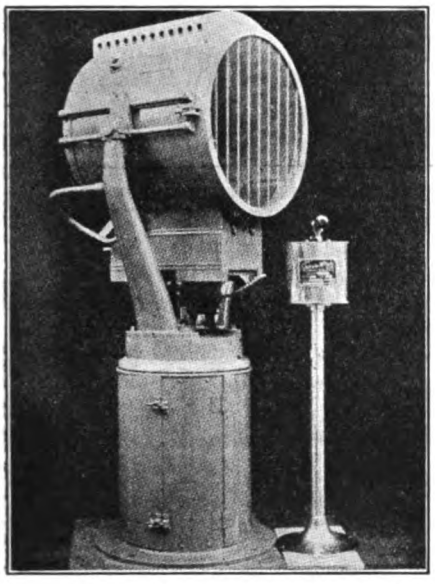
Sunken barges, which had not been used for a year or two, and were resting on the bottom of a river at the ordinary level of the water, and in need of extensive repairs to make them fit for use, were not "vessels used on lakes or rivers or in inland navigation," within revised statutes of the United States, sections 4283 and 4289, so as to limit the owner's liability to the value thereof when they broke loose.—Diamond Coal & Coke Co., 297 *Federal Reporter* 238.

Equipment Used Afloat, Ashore

Accurate Control for Searchlight—Balsa Floats as Life Rafts—Radio Compass Establishes Position—Screens Maintain Transparency—An Efficient Steam Trap

A NEW type of searchlight is being manufactured in which the horizontal and vertical movements are produced by small electric motors. While this is nothing new in itself, nevertheless the apparatus is such a radical departure from previous practice that a description of it may prove of interest.

The usual electric motor operated searchlight moves very slowly. Some of the United States navy and army searchlights make one revolution in about three minutes. This was fast enough when the light is only required to travel over an arc of a few degrees, but for practical navigation it



NEW MOTOR CONTROLLED SEARCHLIGHT

is much too slow. A vessel entering a harbor and having to pick out buoys or land marks, requires a searchlight which can be snapped from side to side quickly. This lack of speed has always been the great drawback of the motor controlled searchlight, and to overcome it, has been the aim of searchlight manufacturers for many years. The Carlisle & Finch Co., 247 East Clifton avenue, Cincinnati, has produced the searchlight shown in the accompanying illustration which is designed to meet this difficulty. While it may seem a simple matter to so arrange the gear reduction that a quick motion can be obtained the difficulty was to stop at the right spot.

A searchlight barrel and frame revolving at a speed of, say one revolution in one-half minute, has considerable momentum so it will overrun 10 to 15 degrees. That is, it cannot be stopped with the light on the spot for which the pilot has been seeking.

The average searchlight beam diverges at about three degrees so a quick stop has to be made or the landmark will be lost. The desired results have finally been secured through a simple electric device which stops the motor instantly. The controller for this searchlight is a compact box on a brass pedestal. The handle controls two motors, one for motion to right and left, the other up and down. The searchlight travels with the handle.

With the handle in the neutral position the searchlight is stationary. The controller handle is held in neutral position by springs so when the pilot releases it, the searchlight stops instantly. So positive is the operation that the beam travels only an infinitessimal amount when the handle is released. The horizontal motion is approximately one complete revolution in 20 seconds. Ninety degrees in five seconds. This has been found in practice amply fast enough for any purpose.

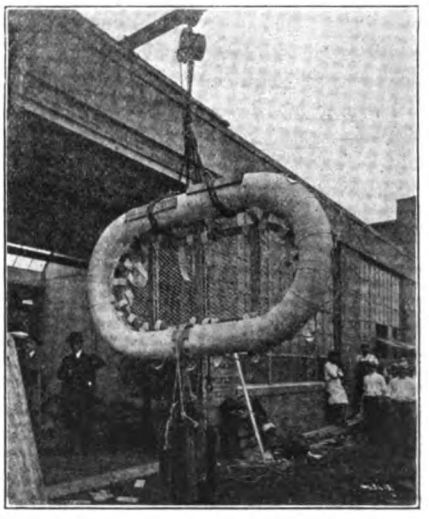
Balsa Floats as Life Saving Equipment

Nothing can very well be of greater importance than properly designed and carefully constructed, efficient life saving equipment for ships, except perhaps the care which it receives after being placed on board and the trained skill of the personnel in safely and quickly launching such equipment in an emergency and perhaps under most difficult conditions.

The United States steamboat inspection service carefully specifies and rigidly inspects this feature during the building of the ship and at frequent intervals during its life and service. This is as it should be. Intelligent rules and regulations and their enforcement without fear or favor will work no hardship either on the builder or owner of the vessel if he is honest and has a conscience.

Due to the personal equation which can never be eliminated, there are times when things go wrong and reports come in that the regular life saving equipment could not be gotten overboard or the boats were smashed with the result that lives were lost. It is for such emergencies and in a sense like a mammoth ring buoy that the balsa floats illustrated herewith and very widely used on smaller craft, would come in very handy on larger ships even though they might have no standing in the yes of the steamboat inspectors as a part of the required equipment.

These floats were developed a number of years ago and are now being manufactured by the Welin Davit & Boat Corp., 305 Vernon Ave., Long Island City, N. Y. They are built up of balsa wood planking mortised, glued and doweled, into the shape of a par-



BALSA LIFE FLOATS GIVEN SEVERE LOAD TEST—SHOW SURPRISING STRENGTH

allel sided ellipse with circular ends. After fashioning into a smoth true cylindrical shape, the float is treated with a parafin or asphalt base preparation, which impregnates the extremely porous soft wood against the action of water. Then the float is completely covered with sewed canvas. Straps and life lines are fitted as well as a strong netting attached to a wooden frame elliptical in shape and somewhat less in dimensions than the inside periphery of the float, hung from canvas straps attached to the float. The whole is then thoroughly painted as a protection against weather and water.

The wood from which these floats are made comes from South America, is known as balsa, is extremely light and cellular in structure. It has considerable strength, in spite of its ap-

parent pithiness, which when combined with ingenious construction makes it possible for the finished product to withstand severe loads as shown in the accompanying illustration.

These floats are manufactured in four standard sizes which respectively accommodate 15, 25,40 and 60 persons each. They are so proportioned that they will nest or stow one on top of

NESTED BALSA LIFE FLOATS—FOUR FLOATS WILL SUPPORT 140 PERSONS

the other in a deck space, equal in area to that required for the largest float which is 13 feet long by 8 feet 8 inches wide, and, in a height of about 4 feet. The neatness with which they stow is shown in the accompanying illustration. And odd size can of course be made on special order.

Large numbers of floats similar to those described and illustrated here were carried during the war by vessels of the shipping board, army transport service and the navy, and many survivors of submarine or mine owe their lives to them.

Clear View Screens an Aid to Navigation

Clear view screens consist of a polished glass disk rotated on a central bearing by an electric motor at such a speed that rain, spray and snow are instantly dispersed. Complete transparency is maintained in all weather conditions. With equal efficiency the rotating disk throws off its surface a green sea or wet fog. The complete instrument is supplied in two standard forms. In the first, a mechanical unit consisting of disk, frame, motor and motor bracket, is mounted in a polished teak frame, which will take the place of an existing window in the wheel house or wing shelter. A metal frame hinges inward to allow access to the front of the disk.

In the second type, known as the hood pattern, the mechanical unit is mounted in a hood that revolves upon a metal pedestal. This type is suitable for any exposed position such as an open bridge. Inside the hood there are teak wood elbow-rests, so that the observer may put head and shoulders within the shelter of the hood and use his glasses in comfort, unaffected by the weather. By a movement of his body he can revolve the hood in any direction that he requires to search. The hood has a canvas back to protect the inside when not in use. The clear view screen can be furnished with a pelorus for determining bearing.

Further information can be obtained from Charles Cory & Son Inc., 183 Varick street, New York, who are the exclusive licensees for this product in United States and Canada.

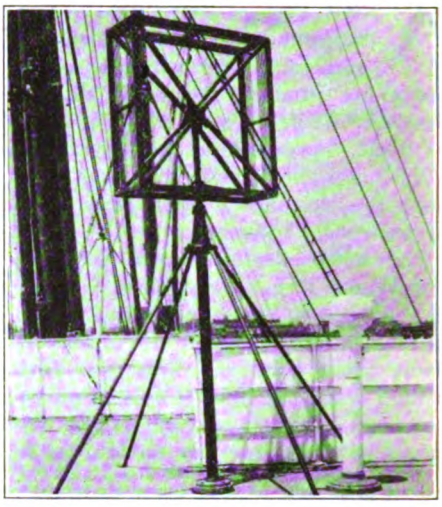
Radio Compass on the U. S. Liner America

The cabin steamer AMERICA operated by the United States Lines between New York and Bremen, Germany, calls at Cobh, Ireland, Plymouth, England and Cherbourg, France. She was formerly the AMERIKA, one of the crack liners of the Hamburg American line. This vessel is the largest cabin ship afloat and will carry approximately 1600 passengers in addition to a crew of 650.

As a part of her equipment to insure safety she carries a radio compass which tells the captain or navi-

CAPT. WILLIAM RIND OF THE S. S. AMERICA TAKING BEARINGS WITH THE RADIO COMPASS

gator the bearing of the ship from any radio station along the shore or on a light ship. This instrument is in use now on approximately 125 vessels ranging in size from 100 tons up to 60,000 tons. With this device on the bridge there is no need of using the ships radio set for obtaining bearings. This will aid considerably in reducing interference to concerts and communication along the coast. Then, too, the officer on duty can take his bearing whenever he wants them whether or not he is near a shore



RADIO COMPASS AERIAL ON THE UNITED STATES LINER S. S. AMERICA

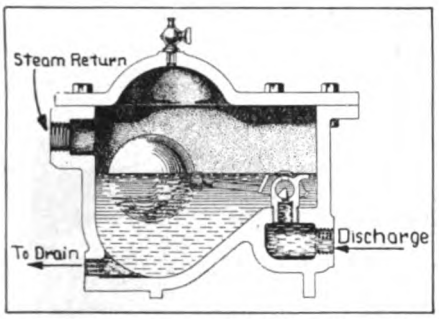
direction finding station. In foreign waters he has had to pay the shore stations for bearings but with the compass aboard ship there will be no charge. This instrument can be used not only along the coast but also in mid-ocean in checking the position of approaching ships and going to the rescue of ships in distress or directing ships coming to the rescue. Due to its simplicity of operation and rugged construction, and further, its compactness, the device is easily adapted to any locality and can be operated by anyone who can read a compass card.

One of the accompanying illustrations shows the aerial of the radio compass on the bridge. The other shows Capt. William Rind, commander of the S. S. AMERICA taking bearings by rotating the square boxed aerial to line up with the direction of any radio station on shore or on a lightship in this way obtaining the position of his ship quickly and accurately.

This equipment is known as the Kolster radio compass and is manufactured by the Federal Telegraph Co., California. It speaks well for the usefulness and need as well as the construction of this device that since 1921 when the first one was installed not a single compass has been removed, according to the makers. Four other ships of the United States Lines including the LEVIATHAN are also equipped with this compass.

A Steam Trap—Simple in Design and Operation

A steam trap is a very useful and necessary piece of equipment wherever steam is used whether ashore or afloat. It should be sensitive, automatic in operation, efficient and of simple and rugged construction so that it will continue to do its work indefinitely with a minimum of attention. Such a steam trap is described in a recently issued catalog A-1926 by W. B. Connor, Inc., 223 West Thirty-Third street, New York City.



SECTIONAL VIEW OF THE ACE STEAM TRAP—CORLISS VALVE PARTLY OPEN

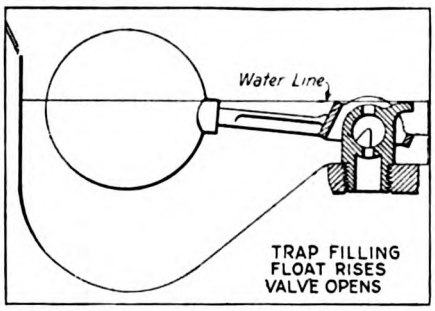
Referring to the accompanying illustrations, a Corliss type of valve in a seat screwed into and connecting with the discharge chamber, is operated by a lever on the end of which is a copper float. When the trap is empty or the water level is sufficiently low, the float in this lower position keeps the valve closed. When the water level rises, the float rises with it and the valve is opened. If the condensation is uniform and constant the trap will operate continuously. If, on the other hand the condensation is intermittant, a sudden rush of water will find the valve open to dispose of the accumulated condensate promptly and then just as quickly seal against steam loss during intermissions. Besides its sensitiveness the Corliss valve is rugged and is not subject to choking with scale mud or sediment as it cannot lift from its seat and wipes it clean at each oscillating motion with the fluctuation in the level of the condensate.

Before the condensate has accumulated in the trap the float is at rest in its lowest position but it does not lie on the bottom of the casing, as a lug on the valve cylinder comes into contact with a similar lug on the valve guide.

As the depth of the condensate increases it submerges the valve and seals it, at the same time rising about the float and forcing it upward. The arm on the float which holds the valve is thus actuated turning the valve in its cylinder so that the discharge port is partly uncovered through which the condensate escapes. As the water level is lowered the port is again closed. This operation it can be seen is extremely simple and sensitive.

As in any trap the valve area alone determines the rate of discharge. This type of trap has a maximum capacity size for size because of its Corliss valve. The Corliss valve uncovers a large area as soon as it opens.

The valve, valve seat and guide are of steam bronze which is an alloy that best resists the action of steam. The float is seamless copper tested under high pressures. The body and cover are of closed grained cast iron and are designed to withstand a hydrostatic pressure of 600 pounds per square inch. A catalog giving further particulars, dimensions and weights of this type of steam trap may be had by any one interested on application to the makers.



DIAGRAMATIC VIEW OF CORLISS VALVE STEAM TRAP

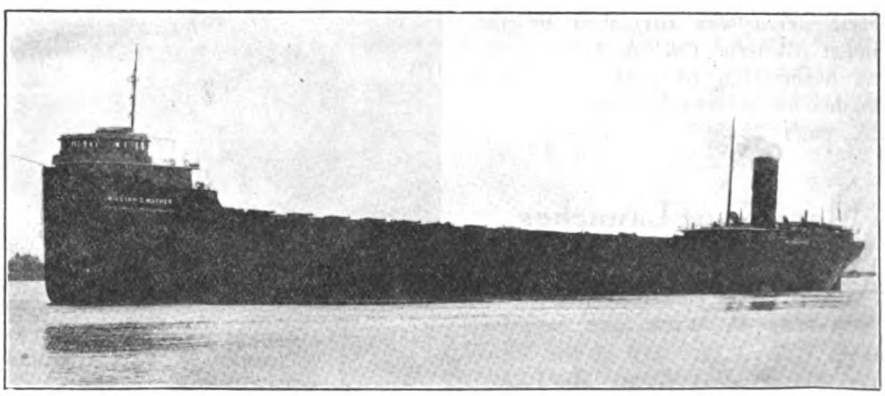
Freighter Completed at River Rouge Yard

On May 23 the WILLIAM G. MATHER a lake bulk freighter building for the Cleveland Cliffs Steamship Co., Cleveland was successfully launched at the River Rouge, Mich., yard of the Great Lakes Engineering works. She was completed ready for delivery about July 25. The accompanying illustration was made from a photograph taken on July 18 in the vicinity of Detroit. The dimensions are: length over all, 617 feet; length on keel, 592 feet; beam molded, 62 feet; depth molded, 32 feet.

Hold construction follows regular Cleveland Cliffs practice, of vertical side tanks, and with the tank top carried to the side of the ship, making the side tanks entirely separate from the double bottom. The main deck stringer is built on an angle, making it self-trimming. A walk, 2 feet wide, is built above this stringer the length of the cargo hold. The vessel has 18 hatches 12 feet x 40 feet in the clear, with Great Lakes Engineering Works sliding plate hatch covers.

The vessel has single deck houses forward and aft, with quarters for the officers and crew in accordance with the best recent lake practice. The owner's quarters consist of six staterooms, with four bathrooms, a sitting room on the spar deck, an observation room in the texas, and a kitchenette, all forward, and a private dining room in the after house. The sitting room, observation room and captain's quarters are all paneled in American walnut. The staterooms are paneled with an enameled finish and the bathrooms are completely tiled. The private dining room is paneled in English oak.

The propelling machinery consists of a quadruple expansion engine with cylinders 21¼ x 31 x 46½ x 68 inches in diameter by 42 inches stroke, fitted with surface condenser and radojet air pump. There are three Babcock & Wilcox boilers, having a total heating surface of 8466 square feet, superheating surface 846 square feet, and a grate surface of 210 square feet. The boilers are fitted with induced draft, Diamond soot blowers and Vigilant feed water regulator. In



BULK FREIGHTER WILLIAM G. MATHER LAUNCHED MAY 23 AT GREAT LAKES ENGINEERING WORKS FOR CLEVELAND CLIFFS STEAMSHIP CO.—ON TRIAL TRIP JULY 18

addition to the main condenser, an auxiliary condenser of 750 square feet cooling surface is fitted.

The ballast system consists of two 15-inch centrifugal ballast pumps direct connected to compound engines, and two horizontal duplex pumps 10 x 14 x 16 inches. There is a separate 12-inch suction main on each side of the vessel to handle the water in the wing tanks, in addition to the regular 8-inch suctions to each compartment of the double bottom. The electric plant consists of three 15 kilowatt generators.

The deck auxiliaries consist of a steam windlass forward, six 8 x 10 inches steam mooring machines, two 6 x 6 inches double geared hatch engines, and a kedge anchor windlass aft. The kedge will be a 7000-pound stockless anchor fitted in a hawse pipe and with 45 fathoms of 2-inch chain. The windlass for the kedge is of the vertical type which occupies comparatively little space on deck, but will have sufficient power to handle the kedge as easily as the forward windlass handles the bower anchors.

T. W. Robinson Completed at Lorain Yard

The new turbo electric drive bulk freighter T. W. ROBINSON had an entirely successful trial trip out of the plant at Lorain of the builders, the American Shipbuilding Co., on July 9, 1925, and is now engaged in carrying lime stone for her owners, the Bradley Transportation Co., Rogers City, Mich. She is a self unloader and the motive power generating plant is used to supply current for the unloading drive motors.

A great deal of interest has been aroused by this first turbo electric drive installed in a large freight vessel on the Great Lakes. The turbo electric drive was furnished by the General Electric Co. A fairly complete description of this vessel was published in MARINE REVIEW for June, 1925, page 224.

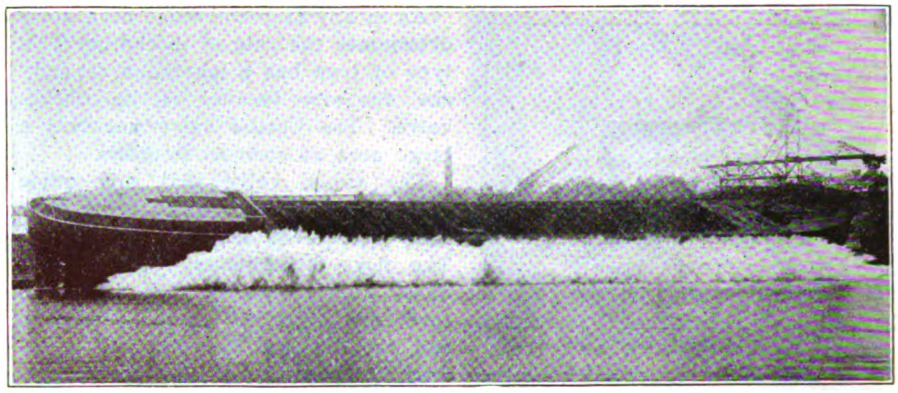
Manitowoc Launches Large Freighter

The twin screw self-unloading steamer CHARLES C. WEST was launched July 8, 1925 at the yard of the Manitowoc Shipbuilding Corp., Manitowoc, Wis. Her dimensions are: Length overall, 470 feet; length on keel, 452 feet; beam, 60 feet; depth, 31 feet.

She will be equipped with three Scotch marine boilers 11 feet 6 inches x 13 feet and two triple expansion engines of about 1000 horsepower each. In addition, she will have one triple expansion engine of 450 horsepower to run conveying machinery.

The steamer is named after Charles C. West, president of Manitowoc Shipbuilding Corp., and is being built for the Rockport Steamship Co., of which Peter Reiss, Sheboygan, Wis., is president. The vessel is of about 6500 gross tonnage.

The launching of the ship took place on the morning of July 8 and she was christened by little Miss Margaret Rietow Reiss, daughter of Mr. and Mrs. William Reiss of Sheboygan.



BULK SELF UNLOADER CHARLES C. WEST LAUNCHED AT MANITOWOC SHIPBUILDING CORP. JULY 8, 1925

Launch John A. Topping at River Rouge

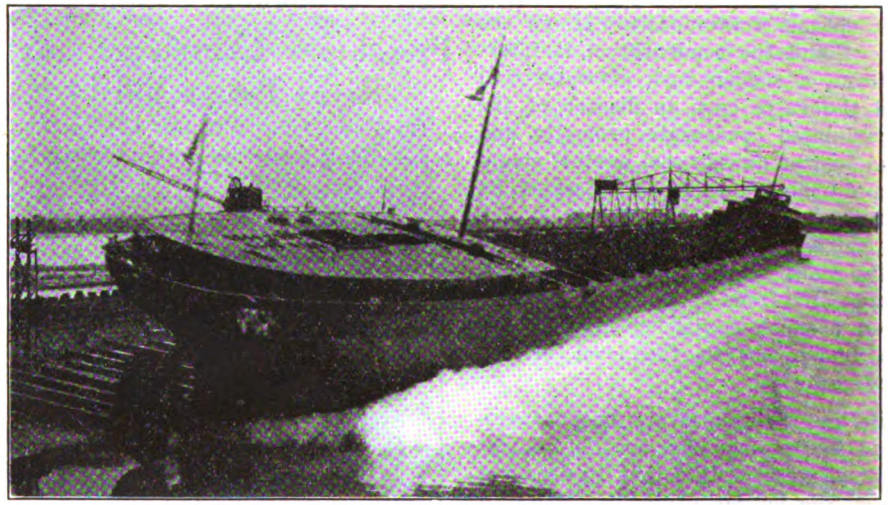
The lake bulk freighter JOHN A. TOPPING building for the Columbia Steamship Co., Cleveland, was launched on July 18, 1925 at the River Rouge yard of the Great Lakes Engineering Works. She was christened by Miss Frances Walker, Youngstown, O.

With the exception of the accommodations, this steamer is a duplicate of the JOSEPH H. FRANTZ, which was built for the Columbia Steamship Co. last year. The dimensions are: length on keel, 592 feet; length overall, 617 feet; beam, 62 feet; depth, 32 feet.

The hold is constructed with sloping side tanks and a sloping main deck stringer similar to the JOSEPH H. FRANTZ. Side tanks are not separate from the double bottom. The vessel has 18 hatches 12 feet x 40 feet in the clear, with Great Lakes Engineering Works sliding plate hatch covers.

She has single deck houses forward and aft, with three stateroom and a kitchenette for the owners forward and private dining room in the after house. The quarters throughout are finished in oak.

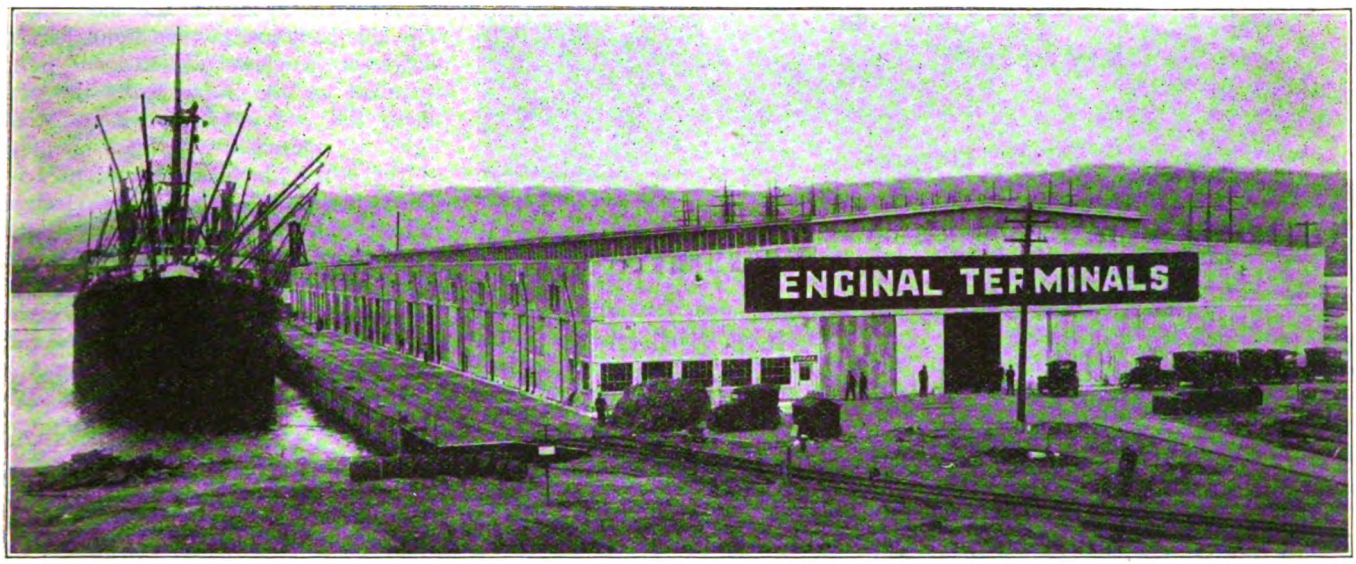
Her propelling machinery consists of a triple expansion engine with cylinders 24-41-68 inches in diameter by 42-inch stroke, fitted with surface condenser of 3760 square feet cooling surface and radojet air pump. An auxiliary condenser of 850 square feet surface is also fitted. There are three Babcock & Wilcox boilers.



LAUNCHING OF LAKE FREIGHTER JOHN A. TOPPING—GREAT LAKES ENGINEERING WORKS JULY 18—OWNERS COLUMBIA STEAMSHIP CO.

Dock Management Progress Section

How Successful Dock Operators Have Met Problems of Giving Best Service to Ships

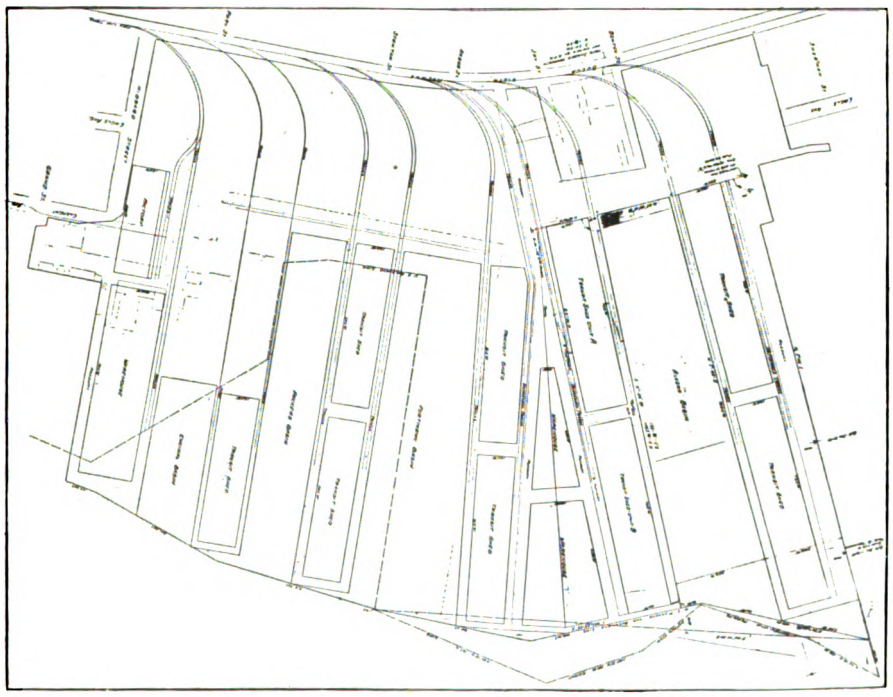


First unit of the Encinal Terminals, Oakland, Calif.—A double tracked apron permits of interchange of freight direct from ship to rail.

Cargo Moved Direct from Ship to Rail

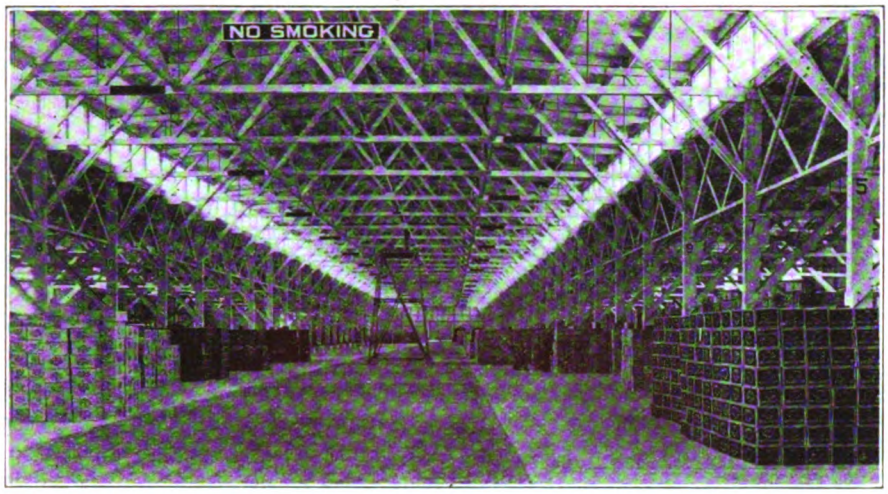
BY DON PARTRIDGE

THE industrial development along the entire Pacific coast has been most pronounced during the past few years and has resulted in a tremendous increase in the amount of freight, in both raw and finished materials, moving from Atlantic coast ports to Pacific coast ports. The city of Oakland, directly across the bay from San Francisco, is forging ahead industrially, perhaps at a greater rate and more rapidly than any other city on the coast. This city is the western terminal for three transcontinental railroads, the Southern Pacific Co., the Western Pacific Co. and the Santa Fe system, and many thousands of tons of freight moved overland by these lines are loaded aboard vessels for shipments to the Orient and other Pacific coast ports, north and south.



GENERAL LAYOUT OF THE COMPLETE PLAN OF THE ENCINAL TERMINALS AT OAKLAND, CALIF.—TRANSIT SHED UNIT A IS COMPLETED AND NOW IN OPERATION

To take care of both the intercoastal and transcontinental freight handled through the port, extensive improvements are now under way along the entire water front. Many other contemplated improvements are in the preliminary stage of planning. With this increase of water borne tonnage the Oakland estuary has come rapidly to the fore. One of of the newest dock developments in this section of Oakland harbor, is the Encinal Ter-



INTERIOR VIEW OF THE TRANSIT SHED OF THE FIRST UNIT OF THE ENCINAL TERMINALS—GIVING SOME IDEA OF ITS SPACIOUSNESS

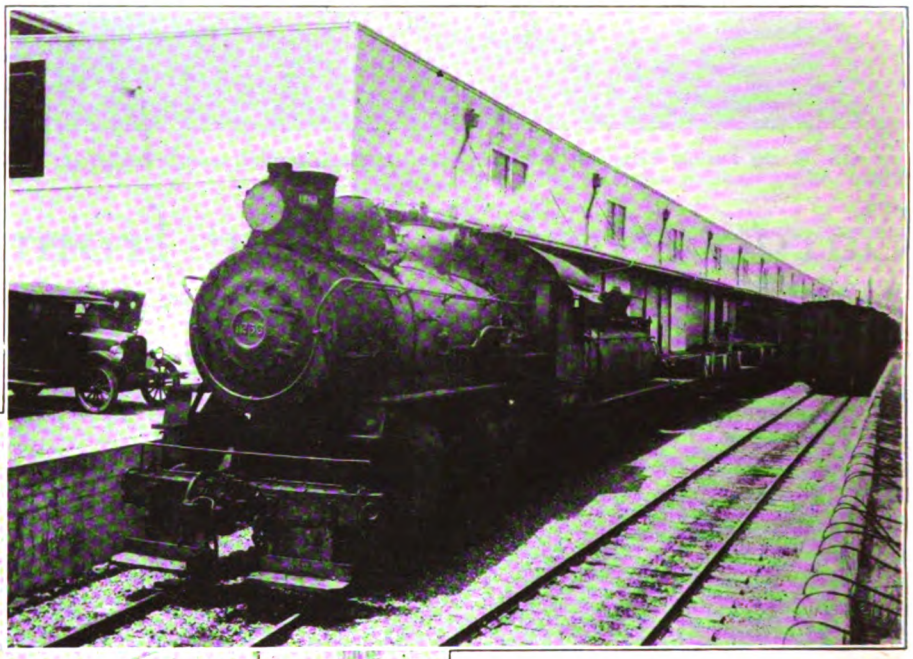
minals project, the first unit of which has been completed and is now in operation, while the second unit is under construction.

The property of this company lies on the south or Alameda side of the estuary and contains, in all, 86 acres. The plans call for nine transit sheds and two warehouses, upon which approximately $5,000,000 will be spent during the next two and one-half years.

Unit A, a transit shed, is 700 feet long by 165 feet in width, the entire west side of which faces Alaska basin which has been dredged to a depth of 31 feet at mean low tide, permitting ocean going vessels to dock alongside and discharge and load cargo. This building rests upon concrete piles and the floor is of solid concrete. The superstructure is of the monitor type with side walls of corrugated galvanized sheets and patent roof.

The interior of the building has been divided into three bays, the middle one being 70 feet wide and the two side bays each 45 feet wide. Ample light has been provided for by windows that run the entire length of the building on both sides of the main bay directly under the eaves, the roof of the main bay being several feet higher than those of the side bays. The side bays are in turn lighted by a series of windows which have been installed on the outer walls directly above the line of doorways and this light is increased by the opening of the doors which are spaced at frequent intervals. Clusters of electric lights flood the transit shed at night when operations are being carried on.

To eliminate congestion and to facilitate rapid handling of freight both in and out of the warehouse, an open dock, 35 feet wide, adjoins the transit shed on the water side. A



ON THE LAND SIDE DOUBLE TRACKS HAVE BEEN DEPRESSED SO THAT FREIGHT CAN BE MOVED BETWEEN CARS AND DOCK ON THE SAME LEVEL

AN OUTER OPEN DOCK OR WIDE APRON ADJOINS THE TRANSIT SHED ON THE WATER SIDE—DOUBLE TRACKS MAKE IT POSSIBLE TO LOAD SIMULTANEOUSLY FROM CARS TO SHIP AND FROM DOCK TO CARS OR VICE VERSA

double row of tracks run along the entire length of this outer dock, permitting loading or unloading to be done direct from car to ship. On the opposite side of the transit shed, the land side, an 8-foot concrete platform has been built and two depressed tracks have been constructed so that freight can be interchanged between the dock and cars without lifting or lowering, thus greatly increasing the efficiency of handling.

The Alameda Belt Line railway serves the terminal and one engine and crew is kept busy practically all

of the time switching cars in and out of the terminal.

The floor space in the transit shed is 112,000 square feet with a weight capacity of 800 pounds per square foot. As much as 15,000 tons has been handled monthly since the opening, in February of this year.

C. M. Covell is president of the company and has on his staff a number of capable men who have been in the transportation business for many years. The main offices of the company is located at 112 Market street, San Francisco.

It is in planning and building wisely in this manner that permanent and secure foundations are laid for the growth and expansion of the business of transportation by water. Is American enterprise to stop at the water's edge? Every endeavor should be put forth to see to it that at least a fair proportion of American ships make use of these unexcelled terminal facilities.

Wants Naval Architects and Junior Engineers

The United States civil service commission announces an open competitive examination for assistant naval architect. Vacancies in the bureau of construction and repair, navy department, Washington, and in positions requiring similar qualifications throughout the United States, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion. Apply to the civil service commission for full details. The entrance salary for this position in the District of Columbia is $2400 a year. Advancement in pay may be made without change in assignment up to $3000 a year. For appointment outside of Washington, the rate of pay will be approximately the same. Promotion to higher grades may be made in accordance with the civil service rules as vacancies occur, provided the employes possess the qualifications deemed necessary for the corresponding advance in duties and responsibilities. Receipt of application will close Aug. 19, 1925.

The United States civil service commission announces an open competitive examination for junior engineer to be held at Chautauqua, N. Y., and at any of the places listed at which examination is requested in applications received by the commission at Washington, on or before Aug. 8, 1925. Vacancies occurring in the federal classified service throughout the United States will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion. A person who enters this examination will not be allowed to enter any other examination for which the receipt of applications will close on the same date. The entrance salary in the District of Columbia is $1860 a year. Advancement in pay may be made without change in assignment up to $2400 a year. For appointment outside of Washington, the rate will be approximately the same. Promotion to higher grades may be made in accordance with the civil service rules as vacancies oc-

Nautical Assistant for Hydrographic Office

The United States civil service commission announces a competitive examination for nautical assistant. Receipt of applications will close Aug. 29. The examination is to fill vacancies in the hydrographic office of the navy department, for duty in Washington, or elsewhere.

The entrance salary for this position in the District of Columbia is $1680 a year. Advancement in pay may be made without change in assignment up to $2040 a year. For appointment outside of Washington, the salary will range from $1320 to $2040 a year. There is a vacancy at New York City at an entrance salary of $1320 a year. Promotion to higher grades may be made in accordance with the civil service rules.

Competitors will be rated on pure mathematics; navigation, theory and practice; physical geography; nautical definitions; seamanship; and education and experience. Full information and application blanks may be obtained from the United States civil service commission, Washington, or the secretary of the board of United States civil-service examiners at the post office or customhouse in any city.

Shanghai Shipping—1924

The total tonnage entered and cleared at the port of Shanghai during 1924 was 32,305,419 according to advises to the department of commerce. This represents an increase of 7 per cent over 1923, when a total of 30,018,240 tons entered and cleared. Ships of British registry stood first in both years, with Japanese second, Chinese, third, and American fourth, representing respectively 36, 24, 17, and 11 per cent of the 1924 total. Not a poor showing for the United States.

Two West Coast Towboat Companies Are Merged

Effective July 1 the Oakland Launch & Tugboat Co., Oakland, Calif., was merged with the Henry C. Peterson Launch & Tugboat Co. of San Francisco, and the combine will be known in the future as the Harbor Tug & Barge Co. The consolidation of the two companies will give the new organization a fleet of 28 tugboats, ranging from 20 horsepower to 400 horsepower each, nearly all of which are equipped with diesel engines. In addition 31 barges of various descriptions, together with pumping and wrecking equipment will be operated by the new company.

A. E. WILLIAMS

Mr. Williams has been elected secretary and general manager of the Harbor Tug & Barge Co., San Francisco

The Henry C. Peterson Launch & Tugboat Co. was organized some 35 years ago and comprised, at that time, one yawl boat. The Oakland Launch & Tugboat Co. was formed in 1906 with one small launch and is owned and operated by the American Dredging Co.

The directors of the new company are: Arnold Foster, secretary-treasurer of the Bethlehem Shipbuilding Corp., Marshall C. Harris, president of the American Dredging Co., Nicholas R. Harris, secretary and general manager of the American Dredging Co., Russell S. Harris, superintendent of the American Dredging Co. and Joseph Freidlander, vice president Anglo London, Paris National bank. Nicholas R. Harris is president of the new company. A. E. Williams is secretary and general manager.

Late Flashes On Marine Disasters

Brief Summaries of Recent Maritime Casualties— A Record of Collisions, Wrecks, Fires and Losses

Name	Date	Nature	Place	Damage Resulting
Albatros	May 30	Collision	Rotterdam	Amidships
Alice	June 5	Collision	Brunsbuttelkoog	Damaged
Aberdale	June 6	Collision	Lower Hope	Stem—bows
Athabasca	July 4	Struck bot.	Whitefish Point	Not stated
Alkmini	June 3	Collision	Salonica	Sank
Angeline	June 8	Ashore	Soo River	Plates
Arraize	June 10	Struck dock	Bilbao	Bows
Andalusia	June 23	Fire	Buenos Ayres	Cargo
Alpena	July 9	Collision	Hocking Valley dock	Plates
Astrea	May 28	Fire	Callao Bay	Sank
Andree Dupre	June 21	Fire	Montreal	Total loss
Araguaya	June 26	Collision	Gravesend	Port bow
Agwibay	July 10	Disabled	Tangier Bar	Steering gear
Bronx	June 16	Disabled	Governors Island	Not stated
Braga	June 3	Collision	Brunsbuttelkoog	Plates
Badger	June 24	Collision	Russell Island	Sank
Benson Ford	July 2	Aground	St. Clair Flats	Not stated
Barbarigo	June 1	Fire	Port Said	Cargo
Bombay Maru	June 3	Ashore	Notoro Kahafuts	Not stated
Bowwave	June 11	Ashore	East Scar Rocks	Not stated
Burnside	June 18	Collision	Yarmouth	Stem plates
Ben Blanche	June 25	Collision	Liverpool	Damaged
Bartolo	June 30	Collision	Not stated	Sank
Christina	May 30	Collision	Rotterdam	Forepeak
Coombar	April 29	Collision	Sydney	Stem
Craster Hall	June 16	Disabled	London	Lost prop.
Cyril T.	June 15	Sank	Bear Cove Point	
Comet	June 20	Fire	New York	Considerable
Custodian	June 23	Fire	West Sister Island	Total loss
Carency	June 3	Collision	Spurn	Stem
Charmer	June 27	Struck rocks	Providence	Sank
Chio	June 11	Ashore	Tazones	Damaged
City of Durban	May 29	Struck breakwater	New York	Stem plates
Coracero	May 29	Collision	Santos	Stem
City of Lahore	June 2	Fire	Queen's Dock	Cargo
Conqueror	June 9	Collision	Spurn	Sank
Chios	June 18	Aground	St. Vincent	Not stated
California	June 23	Collision	Cardiff	Plates
Cachalot	June 21	Fire	Southport	Not stated
Clan MacFarlane	June 25	Disabled	Not stated	Rudder post
Corrientes	June 25	Struck pier	Liverpool	Stem
Canby	July 13	Fire	Kill Van Kull	Not stated
Condor	June 26	Grounded	Not stated	Waterlogged
Canberra	June 30	Fire	Sydney	Considerable
Claus Horn	July 1	Grounded	Falmouth	Not floated
Dorte Jensen	June 20	Struck rock	Halletto Point	Considerable
Don Jose	May 27	Sank	Montevideo	
Dartmouth	June 4	Disabled	Lowestoft	Machinery
Demosthenes	June 10	Ashore	Comore Island	Considerable
Dennis Simmons	June 19	Sank	Not stated	Total loss
Elsie Annie	June 4	Struck wreckage	Wexford	Propeller
Elaine Llewellyn	June 12	Collision	Antwerp Docks	Not stated
Euphony	June 8	Ashore	Casidy Rocks	Not stated
Edith Constance	June 9	Grounded	Mablethorpe	Floated
Exfortis	June 9	Stranded	Seaton Sluice	Not stated
Elizabetha	June 15	Grounded	Maryport	Bottom
Eastlea	June 19	Collided dock	Barry	Plates
Emile	June 24	Sprung leak	Banks	Sank
Edendale	June 25	Ashore	Billiton	Not stated
Eemdijk	June 25	Collision	Hamburg	Not stated
Frej	June 6	Collision	Lower Hope	Port quarter
Fannie & Fay	June 20	Waterlogged	Tortugas	Not stated
Falcon	May 29	Collision	Brightlingsea	Jib and stay-sail
Fenchurch	May 29	Fire	Sandy Hook	Not stated
Fair City	May 30	St'k. Camperdown Quay	Dundee	Port bow
Florence Swyers	June 1	Sprang leak	Cadiz	Sank
Finvoy	June 11	Ashore	Ayr breakwater	Floated
Fulgor	June 17	Struck submgd. obj.	New Orleans	Propeller-rudder
F. B. Squire	July 9	Collision	Hocking Valley dock	Not stated
Funchall	July 8	Grounded	Grassy Island	Not stated
Fernande	June 26	Struck quay wall	King's Dock	Plates, bow
Fushiki Maru	June 26	Ashore	Yokohama	Total loss
Gudrun Maersk	June 15	Aground	Gulfport	Floated
Genkai Maru	June 12	Ashore	Naka Shiretoko	Leaking
Gansfjord	June 29	Ashore	Belize	Floated
Glenfinnan	July 4	Collision	Frechette's Point	Not stated
Graciella	May 16	Fire	Liverpool	Cargo
Guethary	June 5	Collision	Barry	Damaged
Groningen	June 17	Collision	Antwerp Roads	Not stated
Goshu Maru	June 24	Stranded	Vladivostock	Not stated
Helge	June 19	Disabled	Scaw	Air pump
Harpagus	June 22	Fire	Buenos Ayres	Not stated
Industry	June 22	Ashore	Fairfield Bar	Floated
Ioannis D.	June 18	Ashore	Cape St. Vincent	Not stated
Iorax	June 3	Collision	Salonica	Not stated
John A. Holloway	June 30	Collision	Welland Canal	Badly
Jean Jacques	June 13	Disabled	Algiers	Shaft
Juan Marina II	June 3	Collision	Bilboa	Not stated
Jerseymoor	June 4	Fire	Norfolk	Bunkers
Joseph	June 24	Sank	West Float	
Kisshin Maru	June 4	Stranded	Okushiri Island	Sank
Kairouan	June 15	Disabled	Brest	Machinery
Konsul Schulte	June 17	Aground	Rorvik	Bottom
Kibi Maru	June 9	Collision	Taku	Bows
Kuaili	June 9	Collision	Taku	Damaged
Karin	June 11	Grounded	Copenhagen	Not stated
K. J. Cochrane	June 24	Fire	Port Greville	Total loss
Lexington	June 16	Disabled	New York	Driving shaft
Lake George	June 16	Sank	New York	
Legnano	June 3	Fire	Lisbon	Not stated
Lake Florian	June 8	Leaking	San Juan	Cargo
Lincoln	June 19	Struck ledge	Campodello Isl.	Drifting
Legnano	June 3	Fire	Lisbon	Not stated
Lucifer	June 10	Fire	Pauillac	Not stated
Leodium	June 10	Aground	Tocuani Bar	Not stated
Luciana	June 15	Collision	Cuxhaven	Damaged
Lenfield	June 29	Collision	Not stated	Considerable
Marore	June 15	Fire	Baltimore	Not stated
Magne	June 5	Collision	Brunsbuttelkoog	Not stated
Maddalena Odero	June 5	Fire	Genoa	Cargo
Minerva	June 10	Collision	Palermo	Leaking
Montpelier	July 6	Collision	New York	Stern
Max M. Warbur	June 9	Ashore	Rattray Briggs	Not stated
Magdalena Garcia	June 18	Collision	Bilbao	Not stated
Marloch	June 26	Collision	Quebec	Not stated
Newport	June 10	Disabled	San Francisco	Engine
New Shoreham	June 16	Struck dock	Providence	Propeller
Newfoundland	June 18	Disabled	Belfast	Machinery
Nordic	May 21	Struck dock wall	Singapore	Plates
New Moon	July 4	Collision	San Pedro	Badly
Nobles	June 8	Disabled	Gibraltar	Air pump
Norseman	June 18	Collision	Yarmouth	Sank
Nissho Maru	June 21	Sank	Pinnacle Island	
Orini	June 8	Fire	Nelson	Total loss
Orenie	June 9	Struck rock	Jersey	Not stated
Orpheus	June 23	Struck rock	Agoeiro	Leaking
Olga Siemers	June 25	Collision	Hamburg	Plates
Ocean King	June 26	Collision	Quebec	Sank
Principessa Giovanna	May 29	Collision	Santos	Not stated
Pasajes	June 15	Collision	Cuxhaven	Not stated
Pioneer	June 23	Stranded	Penzance	Not stated
Parana	June 29	Collision	Not stated	Considerable
Piave II	July 2	Collided dock	Barry	Stem
Quantico	June 22	Fire	Block Island	Not stated
Reliant	May 29	Sprang Leak	Tory Island	Sank
Rosetta	June 9	Collision	Spurn	Not stated
Rose Schiaffino	June 29	Collision	Gibraltar Strait	Bow
S. H. Squire	June 16	Struck Object	Green Bay	Plates
Solide	June 7	Collision	Bremerhaven Rds.	Sank
San Carlos	June 23	Aground	Tecapan Bay	Not stated
Silverbrook	July 2	Disabled	Wilmington	Engine
Strathlorne	May 28	Fire	Perim	Not stated
Sphinx	May 28	Fire	Marseilles	Not stated
Stepdance	May 29	Foundered	London	
St. Servan	May 27	Collision	Gravesend	Considerable
Sir Acton Blake	May 27	Collision	Gravesend	Not stated
Service	May 28	Fire	Grimsby	Not stated
Shinfuku Maru	June 9	Ashore	Hirado Straits	Not stated
Slamat	June 23	Collided quay	Marseilles	Prop. blade
St. Mungo	June 25	Collision	Liverpool	Damaged
Shahristan	June 26	Collision	Gravesend	Port quarter
Sama	July 10	Disabled	Tompkinsville	Steering gear
Sardinia	June 26	Fire	Las Palmas	Cargo
Submarine 27	July 2	Collision	Mew Island	Not stated
Tiziano	June 10	Collision	Palermo	Bow
Tremeadow	June 5	Collision	Barry	Damaged
Thomas Britt	June 8	Struck breakwater	Port Arthur	Plates
Union Hullera	June 6	Ashore	Gijon	Total wreck
Volsinio	June 1	Disabled	Rotterdam	Rudder
West Saginaw	June 15	Str. sub. obj.	Nantucket	Plates
Wallsend	April 29	Collision	Sydney	Bow
Washington	June 13	Grounded	Oakland Flats	Not stated
West Marsh	June 3	Collision	Spurn	Port bow
West Nomentum	June 25	Collision	Astoria	Not stated
West Islip	June 11	Fire	San Francisco	Not stated
West Hesseltine	June 28	Stranded	North Reef	Total loss
William J. Reiss	July 4	Collision	Frechette's Point	Not stated
William H. Daniels	June 16	Ashore	South Manitou	Not stated
West Campgaw	June 15	Disabled	Delaware Breakwater	Machinery
Wenning	June 17	Collision	Antwerp Roads	Not stated
Waimate	June 19	Stranded	Cape St. Vincent	Total loss
Westdale	June 30	Disabled	Plymouth	Engines
Zulia	June 11	Ashore	Los Roques Island	Total wreck

Marine Business Statistics Condensed

Record of Traffic at Principal American Ports for Past Year

New York

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
June, 1925	521	2,177,995	507	2,103,914
May	435	1,820,544	538	2,215,561
April	434	1,796,849	528	2,093,444
March	472	1,899,036	517	2,032,263
February	398	1,680,392	449	1,867,624
January	387	1,556,853	457	1,869,323
December	423	1,673,567	470	1,822,485
November	392	1,709,329	456	1,921,088
October	459	1,915,122	540	2,332,411
September, 1924	476	2,072,324	483	2,026,172

Philadelphia

(Including Chester, Wilmington and the whole Philadelphia port district)
(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
June, 1925	107	260,756	67	165,940
May	87	209,866	63	155,359
April	102	248,546	67	182,335
March	96	238,863	58	163,257
February	93	238,802	55	154,033
January	77	224,574	57	180,331
December	71	179,994	61	188,667
November	85	220,852	59	174,470
October	75	171,465	52	137,653
September, 1924	82	192,900	66	161,925

Boston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
June, 1925	161	368,009	111	213,985
May	118	296,551	93	205,291
April	99	224,275	82	179,010
March	94	295,292	54	159,928
February	85	278,024	46	121,141
January	78	205,327	34	80,480
December	100	278,347	52	125,332
November	97	310,423	55	149,777
October	128	327,931	82	179,963
September, 1924	113	308,352	75	183,286

Portland, Me.

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
June, 1925	26	87,668	23	88,892
May	23	42,242	27	47,648
April	24	53,326	30	86,338
March	29	96,263	27	88,408
February	21	72,642	24	83,393
January	23	65,910	23	65,218
December	30	86,088	29	78,076
Nvember	15	26,281	12	19,616
October	11	12,506	15	24,551
September, 1924	19	42,910	16	34,818

Providence

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
June, 1925	8	34,034	7	28,575
May	15	40,589	9	27,016
April	8	26,506	9	34,277
March	11	43,757	7	28,136
February	12	37,995	13	41,669
January	12	38,395	11	39,717
December	9	36,259	11	40,624
November	11	45,232	8	37,967
October	6	16,071	8	14,522
September, 1924	7	20,038	5	21,937

Portland, Oreg.

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
June, 1925	19	64,684	26	85,839
May	11	47,728	20	77,847
April	17	68,981	19	80,425
March	15	56,297	26	90,025
February	13	51,236	21	81,438
January	19	71,880	23	86,518
December	17	64,756	29	115,186
November	27	105,529	36	137,696
October	24	92,077	43	159,017
September, 1924	26	97,923	36	128,205

Baltimore

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
June, 1925	118	343,571	121	353,738
May	118	341,793	129	379,956
April	125	363,563	133	394,223
March	115	344,937	112	322,580
February	103	323,817	79	250,369
January	90	282,299	79	250,369
December	105	326,907	99	291,043
November	105	325,934	97	305,601
October	101	297,822	118	355,500
September, 1924	94	282,861	100	289,324

Norfolk and Newport News

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
June, 1925	81	221,318	152	433,953
May	63	159,186	140	376,657
April	82	84,936	112	308,744
March	26	78,427	100	257,061
February	14	40,669	66	186,031
January	39	95,259	88	262,371
December	41	108,930	93	274,576
November	31	89,647	70	205,671
October	39	95,375	71	227,247
September, 1924	80	83,640	80	251,466

Savannah

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
June, 1925	26	60,788	27	60,924
May	27	71,946	22	65,595
April	39	106,938	36	59,574
March	..	.....	...	.....
February	40	101,403	37	91,185
January	33	90,730	33	91,062
December	40	109,496	40	113,538
November	36	109,623	39	115,168
October	35	101,689	31	93,380
September, 1924	34	94,422	36	100,903

Key West

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
June, 1925	87	95,553	85	95,397
May	104	119,502	103	119,729
April	85	103,116	84	102,860
March	88	105,841	87	115,285
February	77	94,214	77	96,890
January	75	100,350	71	96,815
December	77	90,316	72	83,706
November	90	101,387	84	102,408
October	75	92,284	72	89,364
September, 1924	84	103,588	83	98,063

Mobile

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
June, 1925	86	161,215	79	156,160
May	95	193,841	89	172,419
April	92	190,808	91	180,993
March	97	215,386	91	197,950
February	93	192,722	82	184,575
January	84	192,722	82	184,575
December	84	165,352	80	165,325
November	80	169,400	73	156,327
September, 1924	80	176,416	71	160,717

Seattle

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
June, 1925	34	143,655	41	174,668
May	28	132,043	39	138,570
April	41	156,761	42	173,116
March	39	168,567	39	157,419
February	31	124,870	30	129,648
January	39	169,458	36	145,663
December	36	164,991	45	181,849
November	40	203,891	45	194,766
October	45	175,725	48	198,037
September, 1924	48	193,049	41	168,594

New Orleans

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
June, 1925	268	679,277	249	609,807
May	256	666,503	276	724,621
April	266	692,569	283	727,156
March	294	774,343	280	738,445
February	178	485,135	170	488,675
January	253	731,964	264	738,164
December	277	776,064	257	735,100
November	247	713,667	250	735,984
October	267	757,738	279	768,630
September, 1924	248	677,631	237	640,301

Houston

(Cargo tonnage)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
December, 1924	99	39,568	102	154,455
November	101	36,016	95	233,436
October	..	34,945	...	192,986
September	94	50,710	90	171,229
August	82	66,665	84	114,966
July	59	77,062	57	288,417
June	65	74,794	72	336,312
May	72	64,937	71	362,350
April	78	76,466	73	337,757
March, 1924	88	113,064	87	411,715

Galveston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
June, 1925	47	120,428	57	177,647
May	46	114,702	53	151,098
April	47	107,223	60	171,863
March	55	147,303	75	228,187
February	56	140,065	90	277,751
January	67	188,781	110	337,882
December	63	190,311	107	341,705
November	100	342,472	126	408,277
October	77	238,918	120	386,412
September, 1924	65	189,293	112	350,178

Los Angeles

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
June, 1925	162	382,186	102	278,294
May	168	363,843	138	298,066
April	153	316,134	137	262,631
March	131	359,572	113	281,149
February	162	284,988	127	237,474
January	127	312,248	115	259,345
December	153	343,151	118	276,302
November	195	310,425	121	223,778
October	156	290,697	184	285,871
September, 1924	128	333,989	136	277,479

San Francisco

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
June, 1925	135	514,900	96	464,024
May	163	567,001	145	554,483
April	134	472,879	157	517,654
March	129	542,912	139	669,367
February	117	443,749	124	454,699
January	119	446,477	126	454,309
December	59	231,805	83	314,541
November	73	251,022	82	318,615
October	64	234,894	72	243,898
September, 1924	67	225,161	65	220,507

Port Arthur

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
June, 1925	26	67,251	30	83,972
May	28	105,707	42	122,871
April	33	100,595	43	116,485
March	38	95,977	45	110,248
February	32	95,537	19	44,376
January	34	100,449	33	85,261
December	34	101,609	41	122,869
November	32	107,737	32	90,726
October	47	144,763	54	159,034
September, 1924	42	120,636	38	105,700

What the British Are Doing

Short Surveys of Important Activities in Maritime Centers of Island Empire

H E. MOSS & CO., Liverpool in their July Circular state: "We believe the turning point must be in sight. The orders secured by shipbuilders during the six months under review are almost negligible, and totally insufficient to keep their yards going; yet they are seizing every opportunity to economize in all directions with a view to reduction of costs. It is impossible under present conditions of labor for these costs to be much, if any, further reduced, and our hope must now be that the government will help industry by affording relief in the form of lower taxation, and so encourage the export trade, which is the keynote to recovery. Labor must likewise do its share by giving a full day's work for a full day's pay. The freight market, whether for cargo boats or oil tank tonnage, is so bad at present that many ships are laid up, and more must follow. Yet, with all this depression, we are still faced with oil fuel bunkers at 75s per ton delivered U. K., as against coal bunkers at 18s or even less."

* * *

THE Finance committee on the Leith Dock commission, Scotland, states that the tonnage of shipping entering the port last year was 2,501,898 tons, an increase of 73,523 tons. During the year 1,885,130 tons of coal were shipped, a decrease of 111,111 tons. In connection with the construction of the new quay well at the outer harbor a sum of £24,372 was spent. The present trade of the port is one million tons less than in 1913-14.

* * *

BIBBY BROTHERS & CO., Liverpool have placed with the Fairfield Shipbuilding & Engineering Co. Ltd., Glasgow, an order for a twin screw motorship of about 7500 tons gross. The vessel which is intended for cargo services between London, Liverpool, Colombo and Rangoon, will be somewhat similar in design to several which have been built within recent years for the same owners by Harland & Wolff Ltd. of Belfast, who have constructed all the Bibby line vessels for a considerable time back. The propelling machinery will consist of twin sets of Fairfield-Sulzer internal combustion engines similar to those constructed by the firm for the Houlder liner Upwey Grange, lately launched, and to those of the Union Steamship Co. of New Zealand's quadruple screw liner Aorangi. In the case of the new Bibby liner, however, the brake horse power on each shaft will be increased from 3,200 to 4,000—not by any alterations in design, but by fitting additional cylinders to each shaft.

* * *

THE Coaster Construction Company, Ltd., Montrose have obtained from the Western Australian government state shipping service an order for a diesel propelled passenger and cargo vessel 200 feet in length. The machinery will consist of a single screw diesel engine, and the auxiliaries will be electrically operated by current generated by a diesel engine. Accommodation will be provided for 36 passengers. The Coaster Construction Co. have completed a bridge over the railway at Edgehill and are proceeding with the erection of a suspension bridge over the North Esk near Milldens House. This work has provided employment in the scarcity of shipbuilding contracts.

* * *

THE Manchester Commerce, a single screw steamer, the first of two vessels being built to the order of Manchester Liners Ltd., of Manchester, for their North Atlantic and Canadian service by the Furness Shipbuilding Co. Ltd. of Haverton Hill-on-Tees has carried out successful steam trials in the Tees Bay, and on the Whitley measured mile. The Manchester Commerce is a first class cargo vessel, built to Lloyd's highest class, being of the two deck and shelter deck type with bridge and top gallent forecastle, and specially constructed to combat the heavy North Atlantic weather and to resist ice. The principal dimensions are: length 436 feet, beam 56 feet 9 inches, depth, 38 feet 6 inches, and a deadweight of about 8000 tons is carried on a moderate draught. The adoption of the builder's multiple drilling system has been a feature of the construction, and the hold and 'tween decks have been specially arranged clear of obstruction to allow for the safe and rapid handling of cargo. A duct keel is fitted forward of the boiler room to give access to the various pipes, even when holds are full of cargo. Steel grain divisions and wood shifting boards in way of hatches are provided in the holds and the lower 'tween decks are fitted out for the transportation of 500 head of fat cattle.

* * *

LORD KYLSANT, speaking at the luncheon following the launch of the ASTURIAS at Belfast on July 7 said the White Star line had placed an order with Harland & Wolff for a large passenger and cargo liner, and the Union Castle line of which he was chairman, had placed an order with Workman, Clark & Co. for an intermediate passenger liner. He added that signs were not wanting that better days lay ahead for the shipbuilding trade. On the question of costs, the shipyard workers had cooperated by responding to the calls made upon them.

* * *

THE passenger motor liner ASTURIAS, 22,000 tons, built for the Royal Mail Steam Packet Co., the largest and most powerful motor-vessel in the world, was launched by Messrs. Harland and Wolff at Belfast on July 7. The new vessel, which will be engaged in South American trade, is 655 feet long by 78 feet broad, and accommodation is provided for 1740 passengers and the crew. The four-cycle double acting motors are the largest diesel engines ever constructed.

* * *

SIR GEORGE HUNTER, chairman of Swan Hunter and Wigham Richardson Ltd., Wallsend on Tyne speaking at the launch of a 5000-ton steamer built for the Great Lakes Transportation Co. Ltd., Canada said the vessel was unique as it was 380 feet long, while the lock on the lakes were only 260 feet. They had had to build two ends of the ship and prepare 144 feet of material, which would be put into the ship in dry dock in Canada. Shipbuilding prospects were very bad. They had no vessels to take the place of those launched. Everyone must do his best

to prevent orders going abroad. If it was not for capital every one would be unemployed, and the country would be like Russia, which had destroyed capital. Shipbuilders had given up all profit, and shipyard workmen had also made sacrifices and co-operated, but sheltered trades, especially railwaymen and miners, were keeping up costs. The miner should work longer hours. Summers Hunter, chairman of the North Eastern Marine Engineering Co. suggested that the government should take more active steps in saving the shipbuilding industry. There was nothing wrong with British shipyards in equipment, brains and workmanship, but continental shipbuilders had organized to secure work.

* * *

THE motor vessel THISTLEROS, built by D. & W. Henderson & Co., Partick, has completed its trials. The vessel which is the first motor ship built for Allan, Black & Co., Sunderland, is of the following dimensions: Length between perpendiculars 400 feet extreme, breadth 53 feet 8 inches, molded depth 35 feet and gross tonnage 4615. Electric auxiliaries are fitted throughout, including winches, windlass and steering gear. The propelling machinery, built and installed by Harland and Wolff is of that firm's Burmeister Wain type, and consists of one single acting diesel engine developing a normal power of 1850 brake horsepower when running at 90 revolutions per minute. Exceedingly satisfactory results were obtained on the trials.

* * *

DAN RATCLIFFE, a large shipowner in the North of England, unveiling the portrait of the donor of £100,000 for the endowment of a home for sailors, mentioned that some of his own ships, which had no capital charges and had been built out of reserves, were coming back from the River Plate without cargo, because there were no freights to be had. Mr. Ratcliffe gave 1,000 guineas to the endowment fund.

Ocean Freight Rates

Per 100 Pounds Unless Otherwise Stated

Quotations Corrected to July 20, 1925 on Future Loadings

NOTE: FREIGHT RATES STEADY WITH BUSINESS QUIET

New York to	Grain	Provisions	Cotton (H. D.)	Flour	General cargo cu. ft.	General cargo 100 lbs.	††Finished steel	REMARKS Freight Offered
Liverpool	1s 6d	$0.50	$0.30 to 0.45	....	$0.40	$0.75	$7.00T	Very quiet
London	1s 6d‡	0.50	....	....	0.40	0.75	7.00T	Very quiet
Oslo	$0.16	0.45	0.40	0.27	0.42½	0.85	7.00T	Very poor
Copenhagen	0.16	0.45	0.50	0.26	0.42½	0.85	7.00T	Very poor
Hamburg	0.12	0.35	0.40	0.18	0.37½	0.75	8.00T	Fair
Bremen	0.12	0.35	0.40	0.18	0.37½	0.75	8.00T	Very poor
Rotterdam and Amsterdam	0.13	0.32½	0.40	0.20	0.35	0.70	7.50T	Good
Antwerp	0.12	0.32½	0.35	0.18	0.35	0.70	7.50T	Good
Havre	0.11	0.50	0.35	0.27½	0.40	0.75	8.00T	Fair
Bordeaux	0.11	0.50	0.35	0.27½	0 40	0.75	8.00T	Very poor
Barcelona	0.18	12.00T	0.30	10.00	—12.00T—		10.00T	Very poor
Lisbon	0.20	0.65	0.40	7.00T	—20.00T—		7.00T	Fair
Marseilles	0.15	0 55	0.30	6.00	—20.00T—		5.00T	Very slow
Genoa	0.15	11.25	0.40	7.25	—18.00T—		9.00T	Very slow
Naples	0.15	11.25	0.40	7.25	—18.00T—		9.00T	Fair
Constantinople	0.27	17.00T	0.75	0.32½	—20.00T—		9.00T	Good
Alexandria	....	17.00T	0.75	0.32½	—20.00T—		9.00T	Good
Algiers	0.20	0.75	0.75	0.40	—20.00T—		7.00T	Very Slow
Dakar	....	15.00	....	12.50T	—21.00T—		10.50T	Poor
Capetown	9.00T	16.00	....	10.00T	—16.00T—		11.00T	Good
Buenos Aires	....	18.00 to 20.00T	....	....	18.00 to 20.00T†		8.00 to 8.80T	Good
**Rio de Janeiro	....	21.50 to 23.50T	....	11.25 to 12.50T	19.00 to 21.00T†		7.00 to 7.70T†	Good
Pernambuco	....	22.00T	....	9.50T	—22.00T—†		9.70T†	Good
Havana	0.22½ to 0.27½*	0.42½*	....	0.22½*	0.54*	1.08*	10.20*	Fair
Vera Cruz	0.25	0.40	0.45	0.25	0.52½	1.05	0.30 to 0.35	Fair
Valparaiso	....	1.07	....	0.70	0.45	0.80	10.00T	Fair
San Francisco	....	0.40 to 0.70	....	0.50 to 1.10	....	2.50	0.55 to 1.00	Very good
Sydney	....	18.00T	2.50	18.00T	18.00-24.00T		9.00-12.00T	Fair
Calcutta	....	16.00T	0.60	12.00T	—16.00T—		10.00T	Fair

T—Ton. ‡Per quarter of 480 lbs. †Landed. ††Heavy products limited in length. *Extra charge for wharfage.
**Plus $1.00 surcharge on all rates to Rio de Janeiro on account of congestion.

From North Pacific Ports to	Lumber Per m. ft.
San Francisco	$5.00
South California	5.00 to 5.50
Hawaiian Islands	10.00 to 12.00
New Zealand	17.00 to 20.00
Sydney	14.00 to 15.00
Melbourne-Adelaide	15.00 to 16.00
Oriental Ports	7.00 to 9.00
Oriental Ports (logs)	11.00 to 13.00
Peru-Chile	11.00 to 13.00
South Africa	17.00 to 18.00
Cuba	14.00 to 16.00
United Kingdom	75s to 90s
United Kingdom (ties)	70s to 80s
Baltimore-Boston range	$14.00 to 15.00
Baltimore-Boston range (ties)	Not quoted
Buenos Aires	14.00
	Flour and Wheat
U. K. and Continent (gross ton)	30s
Oriental Ports (net tons)	$4.00 to 4.50

Principal Rates To and From United Kingdom

	s	d		s	d
Grain, River Plate to United Kingdom	13	0	Pig iron, United Kingdom to New York or Philadelphia	12	6
Coal, South Wales to Near East	10	6	Iron ore, Bilbao to Cardiff	5	9
Coal, United Kingdom to Buenos Aires	18	6	Iron ore, Huelva to Phila. or Balto	9	9
Manganese Ore, Poti to Philadelphia	$3.25				

Bunker Prices

At New York

	Coal alongside per ton	Fuel oil alongside per barrel	Diesel oil alongside per gallon
Dec. 22, 1924	5.25@6.05	1.86½	5.15@5.50c
Jan. 20	5.25@6.05	1.86½	5.50c
Feb. 18	5.25@6.05	1.86½	5.50c
Mar. 17	5.00@6.25	1.86½	6.00@6.50c
April 20	5.00@6.00	1.86½	5.50
May 18	5.00@6.00	1.75	5.48
June 4	5.00@6.00	1.86½	5.50
July 20, 1925	4.90@5.50	1.75	5.50

At Philadelphia

	Coal trim. in bunk per ton	Fuel oil alongside per barrel	Diesel oil alongside per gallon
Dec. 22, 1924	5.25@5.80	1.865	5.15c
Jan. 20	5.25@5.80	2.06	5.41@5.65
Feb. 18	5.25@5.80	2.10@2.25	5.9@6.9
Mar. 17	5.05@5.82	2.06½@2.31	6.10@6.15
April 20	5.00@6.00	1.95@2.06½	5.65½
May 18	5.00@5.80	1.85@1.91½	5.41@5.64
June 4	4.90@5.50	1.86½	5.50
July 20, 1925	4.90@5.50	1.69@1.81½	5.15@5.43

Other Ports

Boston, coal, per ton	$6.69
Boston, oil, f. a. s., per barrel	$1.72
Hampton Roads, coal, per ton, f.o.b., piers	4.35—4.70 f.o.b.
Cardiff, coal, per ton	14s 9d
London, coal, per ton	26s 0d
Antwerp, coal, per ton	23s 6d
Antwerp, Fuel oil, per ton	77s 6d
Antwerp, Diesel oil, per ton	97s 6d

New Trade Publications

STEAM TRAP—Automatic operation without wearing action on the parts of a simple valve mechanism is set forth as a virtue of the steam trap described in a bulletin by the W. B. Connors Co., Inc., New York. Detail of the operation of the trap under working conditions are shown by diagram.

VALVES AND FITTINGS—The complete line of products made by the Walworth Mfg. Co., Boston, is listed in a new catalog No. 83 just published by the company. These products include valves, fittings, tools, wrought pipe and supplies for steam, water, gas, oil and air. The new catalog is in the form of a 5½ x 7¾-inch cloth bound book containing 716 pages. To make reading easy sepia paper printed in brown has been used. The last 78 pages contains useful information and tables as well as telegraph codes and a code index of the products listed in the book.

CORY-RECONY VALVE CONTROL—A new bulletin issued by Chas. Cory & Son, Inc., 183 Varick street, New York City. Important among features of the Cory Recony units described in the new bulletin are; remote control, separate power panel in which all circuits are opened and closed, electrical braking permitting seating with full power, easily set limit switch with positive adjustment, position and manual declutch signal lights at the control station and any angle installation. Units are made in sizes to operate remotely, valves from 2 to 60 inches under varying pressure and temperature conditions.

PYROMETERS—Potentiometer pyrometers is the title of a 56-page catalog just announced by the Leeds & Northrup Co., Philadelphia. Numerous typical installations are shown by photograph. Automatic control equipments also are discussed at some length. Numerous charts from recording instruments are reproduced actual size. A price list together with a 2-page discussion of the theory of the potentiometer pyrometer conclude the book.

SWITCHBOARDS—Installation, operation and maintenance of switchboards are discussed in a new 120-page booklet recently issued by the General Electric Co., Schenectady, N. Y. The booklet is profusely illustrated with photographs, diagrams, tables and formulas. It contains much varied information of value to those installing and operating switchboards.

STEAM SEPARATOR—An interesting development of a steam separator is described in an information leaflet published by the Girscom-Russel Co., 90 West street, New York. This device, which is used on high pressure steam lines, has been changed in design by the addition of a larger helical path and a spatter cap on the outlet pipe to increase the separating efficiency.

AIR COMPRESSORS—Stationary and portable air compressor equipment is described in a 16-page folder of the Allis-Chalmers Mfg. Co., Milwaukee. A general description of air compressors, including direct and alternating current types, while the major features of the machines are described and illustrated.

RADIO DIRECTION FINDER—The marine department of the Radio Corp. of America, 66 Broad street, New York City, has just issued an illustrated 10-page pamphlet on a radio direction finder for marine use. This instrument operates on the principle that a signal of maximum intensity will be received with a loop aerial placed so that its plane points to a radio station which is transmitting. If on the other hand the plane of the loop aerial is at right angles to the direction of the radio transmitter, no energy is picked up and nothing can be heard in the telephones. The position at which the signal drops out, or null point, is well defined and is used to read the direction of the transmitting station. The component parts of the device are especially well illustrated and carefully described. Method of operation and installation on board ship is dealt with. All deck officers and others responsible for the safety of ships should make it a point to keep posted on such equipment, and copies of the catalog may be obtained on request from the Radio corporation.

STACKERS—"Jacklift and Stacker Practice" is the title of a bulletin by the Lewis-Shepard Co., Boston, Mass., which shows 33 installations of its equipment and description of each.

Business News for the Marine Trade

E. H. Carroll has been incorporated for $30,000 to conduct a navigation business, by E. H. and J. F. and R. S. Carroll, with J. J. Barry, 189 Montague street, Brooklyn, N. Y., as attorney.

Haas Motorboat Tours, Alexandria Bay, N. Y., has been formed with $20,000 capital, to conduct a maritime business by D. H. and N. M. and R. M. Haas, with A. R. Cornwall, Watertown, N. Y., as attorney.

Gulf Coast Steamship Co., Houston, Tex., has been incorporated with $75,000 capital, by Alonzo Smith, 1232 West Drew street.

Peerless Steamship Co., New York, has been dissolved.

Transit Navigation Co., Port Chester, N. Y., has been dissolved.

Wood-Miller Marine Engine Co., Detroit, has been formed by Gar Wood, famous speed boat builder and pilot and Harry Miller, noted Los Angeles designer of racing automobiles. The company will have its headquarters in Detroit but will build and market its marine engines from Los Angeles.

Philadelphia & Norfolk Steamship Co., Wilmington, Del., has been incorporated with $2,500,000 capital.

Bouchard Navigation Co., Elizabeth, N. J., has been incorporated with $100,000 capital to own and operate steamships, etc., by Frederick Bouchard, Fred B. Sullivan and Fred Menke, with the last at Elizabeth, as attorney.

Grammer Steamship Corp., Grand Island, Erie county, N. Y., has been formed with $250,000 capitalization by N. Grammer, J. J. Rammacher and Brown, Ely & Richards, Buffalo, as attorneys.

Cuban Ports Terminal Co., Inc., has been incorporated at Wilmington, Del., with $700,000 capital, by T. L. Croteau, to conduct storage and wharfage business.

House of commons, Ottawa, Canada, recently passed a vote of $1,600,000 for construction of the drydock at Esquimalt, B. C., also $130,000 for harbor improvements at Port Arthur and Fort William, Ont.

Orrin F. Perry & Son, Bronx, N. Y., have been incorporated with $25,000 capital to build vessels, etc., by J. D. Eggleston, G. H. Merritt and E. Underwood, Jr., with Burlingham, Veedeo, Masten & Feary, 27 William street, as attorneys.

Bulko Steamship Corp., New York, has been incorporated for $100,000 to conduct a navigation business by A. Outwater, C. M. Barnett, Jr., and F. Douglas, with Crowell & Rouse, 24 Broad street, as attorneys.

Suwannee River Navigation Co., Branford, Fla., has been incorporated with $100,000 capital, by W. M. Fowler and C. H. Fedder.

Fort Myers & Atlantic Navigation Co., Fort Myers, Fla., has been incorporated for $30,000 by H. E. Dantzbecher and Simon Laeb.

Stovall Navigation Co., Monroe, La., has been incorporated with $100,000 capital by Fred Stovall, president, 407 Louisville avenue, and associates.

Lake Erie Steamship Co., Wilmington, Del., has been incorporated for $500,000 to own and operate ships and vessels.

Vessel Service Corp., Dover, Del., has been incorporated to build and repair ships with $25,000 capital.

Maj. Oscar O. Kuentz, Wilmington N. C., district engineer, is interested in completion of breakwater at Harbor of Refuge, Cape Lookout, estimated to cost $1,000,000.

William Cramp & Sons Ship & Engine Building Co., Richmond and Norris streets, Philadelphia, has abandoned plans for a new plant on the 25-acre site at Bridge and Tulip streets and has sold the property.

Minnesota-Atlantic Transit Co. has taken over operation of the Port Huron Terminal Co. wharf, Port Huron, Mich., on a long lease. D. T. Hoopes, Duluth, is secretary of the company. The property is being enlarged about 25 per cent to accommodate increased traffic.

Gulf Dredging Co., Sarasota, Fla., has been incorporated with $50,000 capital by W. K. Johnson and John Karner.

Principle Navigation Co., New York, has been incorporated with $5000 capital by W. Lincoln, V. A. Burns and G. Burns. J. M. Follin, 50 Church street, is attorney.

Yacht Edith Line, Inc., Clayton, Jefferson county, New York, has been incorporated with $500 capital by W. D. R. Lantier, G. O. Gillick and O. P. Gillick. L. M. Ford, Clayton, is attorney.

Baltimore Insular Line, Newark, N. J., has been incorporated to operate steamboats with $125,000 capital by Conover English, Elizabeth, N. J.; T. Bryant Smith, Long Branch, N. J., and Robert Carey Jr., Jersey City, N. J. McCarter & English, Newark, N. J., are attorneys.

Electric Boat Co., Jersey City, N. J., has been incorporated with 800,000 shares of common stock of no par value to operate steamships. United States Corporation Co., Jersey City, is attorney.